

Original Articles.

NOTES ON THE HISTORY OF THE BENGAL MEDICAL SERVICE *

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As the issue of the *Indian Medical Gazette* for January 1901 is that of the first month of a new century, the present seems a favourable opportunity for "taking stock," in the form of a few notes, on the history of the Bengal Medical Service. The present time is the more suitable, as the three independent services of Bengal, Madras, and Bombay, after a separate existence of 133 years, came to an end, as independent services or "establishments" in 1896.

The Bengal Medical Service first came into existence from 1st January 1764, under the orders of the Home Department, Public Proceedings, dated 20th October 1763, the medical officers who were then serving, as independent units, in Bengal, being combined into a service of their own, with definite rank, pay and promotion. The last appointments to this service were made on 29th July 1896. From this date all medical officers admitted to the Indian Medical Service have been placed on one list under that name, their posts at the four different commands of the Indian Army, all, however, being liable to service in any command, as they may be required. The old Bengal service was, therefore, sub-divided into two branches, Bengal and Punjab, both of which were amalgamated with the Madras and Bombay services, the beginning of 1897, the 28th January 1897 being the date of the first commissions conferred after the union. The names of those officers who had entered the three separate services, prior to 1897, still remain on three separate lists for promotion, and probably the last of them will have disappeared from the Army List until at least another thirty years have elapsed.

Vixere fortes ante Agamemnona. Some of the most famous members of the Indian Medical Service were, if I may perpetrate such a "bull," among those whose lives or period of duty in India came to a close, before that service existed as a separate entity. From the earliest period there were medical officers in the service of the East India Company, serving as surgeons both to the East Indians which carried the Company's trade between England and the East, and to the

settlements, or factories, as they were then called in India. Each of these medical officers, however, was engaged separately for one or more voyages, or for a more or less prolonged period of service, without reference to the duties or appointments of other men of the same profession. In fact, no definite service existed, only a number of independent and unconnected individuals served the Company in a medical capacity.

Three names stand out pre-eminently among the early surgeons who served in India during the first half of the three centuries which have elapsed since the English first began to trade with this country in 1608. They are the names of Boughton, Hamilton, and Holwell.

The first of these is Gabriel Boughton. A surgeon of the name of Boughton accompanied the mission under Sir Thomas Roe sent by James I to the Emperor Jahangir at Ajmir in 1612, but his first name has not been handed down. It is not known whether this surgeon was the same man as Gabriel Boughton, surgeon of the East India Company's ship *Hopewell*, who was one of the chief founders of the Company's prosperity. In 1636, the Emperor Shah Jahan, son of Jahangir, was in camp in the Dekkan. One of his daughters was badly burned by her clothes accidentally catching fire, and the Emperor sent to Surat, then the chief British settlement in India, to ask for the help of a European surgeon. The Council at Surat deputed Gabriel Boughton, who was successful in curing the Emperor's daughter. On being told to name his own reward, he asked that permission to trade with Bengal, which had formerly been refused, might be granted to his employers, the East India Company. Boughton was fortunate enough to experience a repetition of this success. Under the Emperor's *farman* the English occupied Pipli in Orissa (now in the Balasore district), and Boughton was among the officers who went to the new settlement in Bengal. Soon after he accompanied a mission sent by the Company to Shah Suja, the second son of Shah Jahan, who was then Subadar or Viceroy of Bengal, at his capital city, Rajmahal. While there Boughton was called in to attend one of the ladies of the court, and was as successful in his treatment of this case, as he had been in that of Shah Jahan's daughter. Shah Suja was, therefore, ready to show his gratitude by affording the fullest liberty to the English to take advantage of the Emperor's permission, and to found factories in Bengal. Under these circumstances, Hughli and Balasore were occupied. Boughton died in India soon afterwards. The place and the date are alike unknown. No memorial, as far as I know, anywhere exists to his memory. The very name of one who took a large share in the earliest foundation of the British Empire in India is now almost forgotten.

* The following notes were compiled altogether from the point of view of a member of the Bengal Medical Service, but I believe that the statements about pay, rank, furlough, &c., in fact all the notes on the early history of the Bengal service, would apply equally, *mutatis mutandis*, to Madras and Bombay.

The second name is that of William Hamilton, who accompanied the Embassy sent by the Company in 1715 to the court of Farakhsir, the then Emperor of Delhi. At the time Farakhsir was suffering from an ailment, said to have been a large hydrocele, which prevented or delayed his marriage. Hamilton cured him, and, as in the case of Boughton, was asked to name his own reward. He asked that his employers, the Company, might be allowed to trade in Bengal free of duty, which of course would give them a great advantage over all other traders, and practically a monopoly of trade. This request the Emperor granted, and issued a *farman* to the Company, allowing them to purchase thirty-eight additional villages near Calcutta, at an annual rental of Rs 8,121, also empowering the President of the Settlement there to issue passports to his employees, exempting their boats and cargoes from search throughout Bengal, and allowing the English to make use of the Murshidabad mint for striking their own coin in the Emperor's name. To Hamilton himself the Emperor gave models in gold of all his surgical instruments, five hundred rupees, and a *khilat* consisting of a magnificent suit of clothes. But, having himself had experience of Hamilton's talents as a surgeon, the Emperor thought it well to retain him in his own service, and refused him permission to return to Calcutta with the other members of the Embassy. Hamilton remained at Delhi for two years, after which Farakhsir gave him permission to return to Europe, on his promising to come back to Delhi after a visit to his native land. He did not, however, live to leave India, but died in Calcutta, on his way home, on the 4th December 1717. He was buried in the old Calcutta burial-ground, which occupied the space where St John's Church, formerly the Cathedral, now stands. Hamilton's tomb was demolished in 1787, when the burial-ground was cleared to make room for the foundation of the church. The nameplate or slab of dark green, almost black, granite, was set up in Job Charnock's tomb at the north-west corner of the ground, where it may be seen to this day.

The third of the famous surgeons of the pre-service days is John Zephaniah Holwell. Unlike Boughton and Hamilton, his fame was gained, not as a surgeon or physician, but as an administrator. He came out to India in 1732, as surgeon to an East Indiaman, and served in Calcutta for sixteen years, till 1748, when he returned to England. In 1736 he was elected one of the aldermen of the Mayor's Court of Calcutta. When in England he submitted to the Court of Directors a plan for the reformation of the zemindar's cutcherry of Calcutta. The result of these suggestions was that, on his return to Calcutta in 1752, he was himself appointed zemindar of Calcutta, with a seat in Council. (The ze-

mindar was the Magistrate of Calcutta. The appointment corresponded roughly with that now held by the Commissioner of Police.) He was in Calcutta when Snaj-al-Daulah attacked Calcutta in 1757. When Drake, the Governor, fled to the ships in the river, abandoning the men under his command, as well as a large number of women and children, Holwell took over the command. He was one of the survivors of the Black Hole, and was afterwards taken as a prisoner to Murshidabad. He escaped with his life, and in 1760 succeeded Clive as Governor of Bengal, but only held office for a few months, returning the same year to England, where he died in 1798, 66 years after his first arrival in India and 38 after his retirement.

Besides Boughton, Hamilton, and Holwell, two other names may be mentioned. John Fryer served the Company in India and Persia, and was the author of an interesting volume of travels, published in 1698. William Fullerton was the sole survivor of the Patna massacre of 5th October 1763. He owed his life to the fact that in his professional capacity he had attended the Nawab of Bengal, Mir Kasim. He seems to have been a good deal mixed up in native intrigue, and resigned the Company's service towards the end of 1763, so just misses coming into the service list. Four medical officers, Head Surgeons Crooke and Ham, and Surgeons Campbell and Anderson, were among the victims of the Patna massacre.

The order of 20th October 1763, which regulated the formation of the Bengal Medical Service, or, as it is called therein, the establishment of surgeons employed under this Presidency, from 1st January 1764, fixed the total strength of the service at forty. Of these the four seniors were to reside at Calcutta, and were entitled Head Surgeons, "the two first to have the hospital contract." The next eight were called Surgeons. The four seniors were to be stationed at Patna, Cossimbazar (Murshidabad), Chittagong, and Dacca, the four juniors to be Surgeons to the Army, and all to succeed in rotation to be Head Surgeons at Calcutta. The remaining 28 were entitled Surgeon's mates. Of these "the eight eldest upon the list to live in Calcutta, the next eight to be Surgeon's mates to the Army, and the other twelve to be Surgeon's mates of the Sepoys, one to each Battalion." The Head Surgeon and Surgeons were paid 10s a day, with Captain's *batta* on field service, the Surgeon's mates at Calcutta 7s 6d per day each, the others 5s per day each with Lieutenant's *batta* when in the field. The order winds up with the words "Agreed that we write to the Court of Directors to send us out some Surgeon's mates to complete this establishment."

Under the above orders some 27 medical officers, who appear to have been serving in India at the time, were formed into the Bengal

establishment of the Indian Medical Service. Only one new appointment was made in 1764, none in 1765 and 1766. But after the first three years the numbers rapidly increased. Three joined in 1767, eight in 1768, nine in 1769, 13 in 1770, eight in 1771, nine in 1772, four in 1773, five in 1774, only two in 1775, one in 1776, four in 1777, eight in 1778, eight in 1779, twelve in 1780, fifteen in 1781, and sixteen in 1782. Then in 1783 there comes a very large increase. In the nineteen years which had elapsed since the foundation of the service in 1764, death had accounted for twenty-four, and retirement for thirteen, out of the original members and subsequent entries. Three had left the medical service for combatant commissions—two in the infantry and one in the artillery. Fourteen more, some of whom had probably died in the meantime, cannot be traced. Sixty-one new appointments were made in 1783, a number larger than the numbers admitted in any subsequent year, from that day to this. It will be noticed that the appointments of this one year alone were fifty per cent more than the original sanctioned strength, and as at least 93 men, who died or retired at subsequent dates, were in the service on 1st January 1783, it is evident that the strength of the service had by this time risen from the number of 40, at which it was originally fixed, to about 150. The twenty years which saw this increase in the service were coincident with the spread of English Government over the whole of Bengal, Bihar, and Orissa, as well as the eastern part of what is now the North-West Provinces, which must have necessitated a large increase in the establishment of every service, military and civil. After the great recruitment of 1783 there naturally followed a lull. Only three new appointments were made in 1784, one in 1785, one in 1786, none in 1787 and 1788. From this year onwards the appointments usually varied from ten to twenty a year, which probably about equalled the wastage by death and retirement, chiefly the former. In a few years the number is smaller, only five in 1790, three in 1793, nine in 1795 and 1796, only one in 1798, and none in 1800. The next year which shows a large recruitment is 1825 with 35, followed and improved upon by 1826 with 56. The number recruited in one year have never since approached the total of 1826. From 1827 till the service was temporarily closed, thirty-four years later, in 1860, the highest numbers entering in one year have been 44 in 1854, 48 in 1855, 42 in 1856, and 41 in 1859. During the last 30 years of the existence of the service, from 1865 to 1896, the highest numbers joining in any one year have been 30 in 1865, after five years' closure, 38 in 1872, after two years' closure, 34 in 1886 and 31 in 1887, after several years of very deficient recruitment,

e.g., in 1883, there were only six new appointments and in 1884 only four.

Of the men who entered the service in its first seventy years few are now remembered at all, and even those whose names still survive, from mention in history or from professional eminence, are in most cases but a dim and shadowy memory. It may be of interest to give the names of a few, with the dates of their entering the service—

3rd April 1783—John Borthwick Gilchrist, Oriental scholar

4th April 1783—John Peter Wade, a voluminous writer on professional subjects

26th September 1791—Francis Buchanan, afterwards Buchanan Hamilton, travelled over and surveyed great part of India, especially Mysore and Bihar, his surveys may be read with much interest to this day

24th May 1803—John Crawford, Resident at Singapore and in Java, went on missions to the Kings of Burma and Siam, and wrote several works on Burma, and the Malay Peninsula

21st March 1805—George Playfair, father of Lyon Playfair

2nd February 1807—Simon Nicholson, a well known Presidency Surgeon in Calcutta

29th June 1807—James Atkinson, Superintending Surgeon of the Army of the Indus in the first Afghan War, Persian scholar, and translator of the Shah-nama

17th September 1808—Horace Hayman Wilson, F.R.S., Sanskrit scholar, afterwards Professor of Sanskrit at Oxford, and Librarian of the East India Company's Museum

10th March 1814—Nathaniel Wallich, Superintendent of the Botanical Gardens

5th September 1817—James Ranald Martin, F.R.S.

20th September 1819—John Forbes Royle, afterwards Professor of Materia Medica at King's College London

10th January 1820—John Forayth, afterwards Director-General

12th August 1824—William Twining, of the General Hospital, Calcutta

22nd September 1825—Frederick Harrington Brett, Surgeon

20th December 1825—John Bowron, died 5th March 1899, aged over 100

15th March 1826—William Lewis McGregor, author of the 'History of the Sikhs'

8th May 1827—Archibald Campbell, the founder of Darjiling, first Resident, and then Superintendent of Darjiling

13th August 1827—Thomas Alexander Wise, founder of Hughli College, and a voluminous writer on Indian Medicine and Surgery

23rd February 1828—George J. Berwick, Surgeon to MacNaghten's Embassy to Kabul, afterwards detailed to attend on the wounded prisoners among the Afghans

29th August 1829—Mountford J. Bramley, first Principal of the Calcutta Medical College

10th February 1831—James Esdaile, experimenter on mesmerism, operating on patients under mesmeric influence, before the introduction of anaesthetics

16th April 1831—Henry Hurry Goodeve, Professor, Calcutta Medical College

5th March 1832—John Spencer Login, guardian to Dulip Singh

8th August 1833—William Brooke O'Shaughnessy, Professor, Calcutta Medical College, and founder of the Telegraph Department in India

20th March 1835—Allan Webb, author of 'Pathologia Indica'

9th July 1835 — William Brydon, sole survivor of the Kabul massacre

In 1839, Messrs Dodwell and Miles, East India Agents, published a list of the three Indian Medical Services, extending over the 75 years from 1764 to 1838 inclusive. The same firm had previously published Army and Civil Lists on a similar plan. The Bengal Medical Service in this list comprises 1,037 names, of whom 698 had left the service in various ways, while 339 were still serving at the date of publication of the list. It will be seen that the service had in 1838 risen to a number not very far short of its maximum, though the Punjab, Central Provinces, Oudh, and Burma, have all been annexed since that time. On the other hand, the Company's Surgeons then served, to some extent at least, with King's troops, and in the Indian navy.

The following table shows what became of each man up to 1838 —

Died	405	Dismissed by Court-Martial,	4
Killed in action	4	Struck off	26
Retired	135	Gave up promotion	21
Resigned	66	Transferred to Madras	1
Invalided	9	Appointed Lieutenant of Infantry	2
Pensioned	8	Appointed Lieutenant Fire worker of Artillery	1
Never joined	3	Cannot be traced	12
Discharged	1	Still in service (in 1839)	339
Total			1,037

Of the 405 who died, 23 died at sea, three of them being lost in shipwrecks, and four were drowned in India. Four men died at the Cape, one each in Mauritius, Natal, Canada, Paris, Thessaly, and Prince of Wales' Island, and ten in the Dutch East Indies while these islands were held by England during the Napoleonic wars. Of these ten, six died in Java, three at Bencoolen, and one at Amboyna. A large number of the deaths took place in England. One man, employed on political service, was murdered at Seon, in 1827. Of the four killed in action, one fell in the battle of Deig in November 1804, one in a naval action on board the *Lord Nelson* East Indiaman, in 1803, one at Chanda, in the Mahratta War, in 1818, and one at Ramu, now in Chittagong district, in the first Burma War in 1824. A fifth was killed at Nanklow in Assam in 1827, but this fact is not mentioned in the list.

The heading "struck off" comprises men who overstayed their furlough, and were struck off for absence without leave. Many of these probably died, their deaths going unreported owing to the imperfect communications of those days.

There seems to be considerable confusion between the headings retired, resigned, invalided, and pensioned. One man was transferred from Madras to Bengal, and one from Bengal to Madras. Four men were dismissed by court-martial, their offences are not stated. Most of the

men who gave up promotion subsequently died in India. In a list of the Prince of Wales' Island Medical Service, given at the end of the book, four men are stated to have been transferred to Bengal, but the names of only two of them appear in Messrs Dodwell and Miles' list. This list is also incomplete in other ways, as the names of some twenty men appear in the Army Lists from 1813 to 1838 whose names are not shown in this list.

The names in Dodwell and Miles' list are arranged alphabetically by the initial letters of their surnames. Under each letter those who entered before 1797 are arranged in alphabetical order, after that year by seniority.

Furlough—Until a period little more than a century ago, officers of the Indian services were not entitled to any furlough. If an officer wished to go home, he had to resign the service, and had no claim to be re-appointed, though, in practice, it appears that many officers, who had resigned to go to Europe, were re-appointed, and did return to India. The first furlough rules were published in 1796. By them an officer who had served ten years in India was allowed furlough up to a period of three years. With the long voyage round the Cape in sailing ships, at least a year would be occupied by the two voyages going and returning, allowing two years at home. But pay was given only for two and-a-half years. Extensions of leave might be given for sickness, or other urgent reasons, but failure to return to India within five years involved forfeiture of appointment. Many officers were struck off the service under this rule, which, by the way, is still in force.

Subsequently various modifications were introduced. Officers with less than ten years were allowed furlough on medical certificate, or leave without pay on urgent private affairs. It gradually became a common practice to take a second furlough after the completion of the full period of Indian service for pension, at the end of which the officer usually retired, though a few returned to India for a third spell of service.

(To be continued)

A REPORT ON AN EPIDEMIC OF CEREBRO-SPINAL MENINGITIS IN CALCUTTA

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WITH BACTERIOLOGICAL REPORT BY

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In the dépôt of the Jamaica Government Emigration Agency at 21, Garden Reach, Calcutta, there occurred, towards the close of

December 1899, and throughout January 1900, several fatal cases of "fever"

These were diagnosed and returned as "remittent fever," that is, malarial fever of a remittent type, but, judged by the light of the information derived from the study of subsequent cases of a similar nature, there can be little doubt that the disease responsible for those fatal cases was, in reality, cerebro-spinal meningitis

The first of the series occurred on the 29th of December, the patient was seized suddenly with fever accompanied by headache, he was removed to the depôt hospital and treated by the native doctor, but became unconscious and died the same day. The death was, in due course, reported as due to remittent fever, and no suspicion was aroused as to the real nature of the case. On January 10th, there was another case which proved fatal on the 16th, on the 11th a third case occurred, dying in a few hours, and there were five further cases in that month, six of the total number proving fatal, on the 1st, 6th, 1st, 3rd, 7th and 3rd days of the disease, respectively

The first case was a boy, aged five years, who came with his parents in a batch of emigrants from Muttra, arriving at the depôt on the 27th of December, and taking ill on the 29th. Previous to the occurrence of this case, the depôt had been healthy, the records for months past were searched, but nothing of the same nature could be found, hence it was inferred that this was the original case of the disease in the depôt, and that the subsequent ones were due to infection from this one

The patient must have been exposed to infection some days before arriving in Calcutta, for no previous case could be traced as having occurred in the depôt, nor is it likely, even if there had been infection in the place, that a new comer would have contracted the disease in such a short time

If it be assumed then that this child of five years old was the means of introducing the infection into the depôt, the subsequent course of the disease will throw light on the period of incubation, and this is a point which, though studied for years, especially in Ireland and America, has not hitherto been satisfactorily worked out. This will be referred to at length when the period of incubation of the disease is discussed. Proceeding with the history of the outbreak, it is found that the second case occurred on the 10th of January, the patient was a single man, aged 19 years, he arrived in the depôt on the 20th of December, in a batch from Fyzabad, and was accommodated in the single-men's shed, which was at a distance from the place where the child had been living, as the latter was with his parents in the subsidiary depôt

The third case occurred on the 11th of January, the patient, who was transferred from

the Trinidad agency, having arrived at the depôt on the 12th of December

This case, like No 2 and the next six, was accommodated in the single-men's shed, so there is the important fact that eight successive cases occurred in the same sleeping shed, and, of these, four slept near each other, while the remaining four were at a little distance, both from the four referred to, and from each other, and in their case actual contact could not be proved

The Jamaica agency having ceased operations, was succeeded by the agency for Fiji, early in February, on the 17th of that month there was a case of the disease, the patient being a man who was transferred from the Jamaica agency, and was taken on the strength of the Fiji depôt on February 16th, he was in the depôt previously, however, but was not required for the ship leaving for Jamaica as the required number of emigrants had been obtained, so, he elected to go to Fiji instead. Thus, though shown as having arrived at the depôt on February 16th, he had been there several days previously, and was attacked on the 17th of February. Between this date and the 9th of June there were 14 other cases in the Fiji agency, and of the total of 15 cases, only two recovered, 12 of the patients having been treated in the Campbell Hospital at Sealdah

When the Fiji agency ceased operations in June, Mauritius started work, on the 29th a single woman arrived in a batch of emigrants from Gorakhpur, and was accommodated at 20, Garden Reach, she took ill with the disease on the 12th of July, and died on the 19th, and this is another instance bearing on the period of incubation of the disease. There were seven other cases from this depôt in July, and two in August, and, in the latter month, one case occurred in No 21 in the married-women's shed, of a total of 11 cases in the Mauritius agency, nine ended fatally

No suspicion was aroused as to the nature of these cases until a man was admitted to hospital at the depôt of the Fiji agency, with fever, semi unconsciousness and doubtful tenderness in one groin. The last symptom created a suspicion that the case might be plague, the depôt surgeon considered it as a suspicious case, and I was asked to see the man. After examining him carefully, I gave a definite opinion that the case was not plague, but a specialist in that disease was called in, who emphatically pronounced the case to be genuine plague! The patient was accordingly removed to the Campbell Hospital, where he died the same evening, and Major Gibbons very kindly made the *post mortem* examination, and reported that the case presented no signs of plague, but that meningitis, both cerebral and spinal, was present. Unfortunately, no bacteriological examination was made, but this was the first instance in which the disease then prevalent at the depôt was proved, by actual examination after death, to be not remittent fever or plague (the latter I considered a diagnosis quite unwarranted by the symptoms that were present), but an inflammation of the membranes of the brain and spinal cord, and, subsequently, every available case was examined *post mortem* with the result

that the diagnosis was verified and the diplococcus intracellularis meningitidis was invariably obtained in the purulent exudation, being identified both by culture and by smear impressions

The period of incubation of cerebro-spinal meningitis has not been satisfactorily determined hitherto. Osler says "the period of incubation is not known", and, in this direction, the outbreak under discussion has been useful, as opportunities have occurred to assist in settling the point

Up to the time of the arrival of the batch of emigrants from Muttra, the 27th of December, the depôt at No 21, Garden Reach, was free from the disease, as evidenced by a careful search through the records for the previous six months. On the 29th of December the first case occurred, the presumption being that the patient was exposed to infection before arriving at the depôt, though it must be admitted that the Civil Surgeon of Muttra, with whom I was able to discuss the subject, said that, as far as he knew, there had not been any cases of the disease in that town. It is quite possible, however, that it had occurred in the district, or even that it had not been recognised.

Assuming then (and I think the assumption is quite allowable) that the first case was introduced into the depôt from Muttra, and that the disease declared itself on the 29th of December, there is a definite date to work from in tracing the subsequent cases, and on the 13th day after the occurrence of the original case, the first one, due to infection from it, was observed. From this it will be allowed that the period of incubation was not more than 13 days.

The next case occurred a day later, that is, dating from the original infection, not more than 14 days after exposure.

There was now a lull until a batch of emigrants arrived from Allahabad on the 10th of January, two of the number developing the disease on the 27th and 28th, respectively, that is, on the 18th and 19th day after their arrival in the infected area.

Again, on the 28th, a man who had arrived from Bareilly on the 15th fell a victim to the disease, that is, on the 14th day after exposure, and closely following him was a man from Fyzabad who was attacked on the 29th or 13 days after arrival.

The next two cases took longer to develop, viz, 32 and 31 days.

The period of incubation of the above eight cases, therefore, assuming they were all exposed to infection as soon as they arrived at the depôt was 13, 14, 18, 19, 14, 13, 32 and 31 days, respectively, and they all occurred in the same building, viz, that known as the "young-men's shed."

On the Jamaica agency ceasing operations, that for Fiji started work, the first two cases of

cerebro-spinal meningitis occurring among some transfers from the former, two of whom were seized on the 17th February and 1st March, respectively. The former arrived in the depôt originally on the 24th of January, so was exposed to infection for 25 days before being attacked, the second, who arrived at the depôt on the same date, was not seized with the disease until 37 days later, and his case is extremely interesting, as it was the first one proved to be cerebro-spinal meningitis, a *post-mortem* examination having been held (this was the case which was emphatically declared to be plague by a special plague medical officer).

Thirteen other cases occurred in the Fiji depôt, the last being seen on the 9th of June, and the time between exposure to infection and the manifestation of the disease being 12, 16, 24, 29, 7, 11, 6, 9, 26, 16, 35, 12, and 34 days respectively.

The Fiji depôt ceased working in June, and in the third week of that month, emigrants for Mauritius began to arrive. On the 12th of July (the depôt having been empty and free from the disease since the 9th of June), a woman from Gorakhpur, who had been living in the depôt at No 20, Garden Reach, was seized with the disease, and was taken to the Campbell Hospital, where she died on the 19th. She arrived at the depôt on the 29th of June, so was exposed to infection for 14 days, a second case occurred on the 14th, and three others on the 15th, then there was a lull, followed by cases on the 26th, 29th and 30th, all these three occurring among a batch of emigrants who had come from Allahabad. Three further cases occurred in the Mauritius depôt, viz, on the 31st and 6th August at No 20, and on the 31st of August at the main depôt at No 21.

There were thus 11 cases in this agency, and the time intervening between the arrival of those attacked and the occurrence of the disease was 14, 18, 25, 28, 24, 16, 18, 20, 15, 21 and 8 days, respectively.

Of the total of 33 cases, the time after admission to the depôt at which the disease occurred was as follows —

After	6	days	1	case	After	20	days	1	case
"	7	"	1	"	"	21	"	1	"
"	8	"	1	"	"	24	"	2	cases
"	9	"	1	"	"	25	"	1	case
"	11	"	1	"	"	26	"	1	"
"	12	"	2	cases	"	28	"	1	"
"	13	"	2	"	"	29	"	1	"
"	14	"	3	"	"	31	"	1	"
"	15	"	1	case	"	32	"	1	"
"	16	"	3	cases	"	34	"	1	"
"	18	"	3	"	"	35	"	1	"
"	19	"	1	case	"	37	"	1	"

From the above it will be observed that nearly half the cases—14—occurred from the 12th to the 18th day after exposure, and that none occurred earlier than the 6th day, while a few

did not declare themselves until after the 30th. Half the cases occurred between the 11th and 19th days; and from the 12th to the 18th appeared to be the most usual time for the development of the disease.

At No 61, Garden Reach, the first case of the year occurred on the 10th of March, the patient was a woman who arrived at the dépôt from Ghazipur on the 26th of February, and was seized on the 13th day after, the next case was observed on the 15th of March, the victim being a man from Bahmach, who had arrived six days previously.

In June, the British Guiana agency commenced operations at this dépôt, and the first case of the disease occurred on the 9th of July, the patient, a man from Allahabad, having arrived on the 23rd of June, that is, 17 days before the illness showed itself.

There were five other cases in this dépôt, occurring 20, 8, 6, 33 and 8 days, respectively, after the arrival in the dépôt, of the people who were attacked.

Of the eight cases at this dépôt, the cases occurred as follows —

After 6 days	2 cases
" 8 "	2 "
" 13 "	1 case
" 17 "	1 "
" 20 "	1 "
" 33 "	1 "

Here, again, the minimum period between exposure to infection and the manifestation of the disease was six days, and half the cases occurred on the 6th and 8th days, the longest period was 33 days, this, again, corresponding very nearly with the results obtained at No 21, Garden Reach.

From the forty-one cases observed above, we can come to the following conclusions —

- (i) That the period of incubation of cerebro spinal meningitis varies considerably within certain limits.
- (ii) That it has not been observed to be less than six days.
- (iii) That it has not exceeded 37 days. Broadly, then, it may be stated that the period of incubation of this disease is from one to five weeks.
- (iv) That many more cases occur in the second and third weeks than in the first, fourth and fifth.

I know of no disease that presents greater irregularities as regards onset, development and course than cerebro spinal meningitis.

From the experience derived from the study of over fifty cases, occurring at the two emigration dépôts, the Alipore Reformatory and the South Suburban Hospital, I have been able to distinguish four different types of the disease, which may be classed as follows —

- I The fulminant cases
- II The acute
- III The sub-acute and chronic
- IV The atypical or irregular, all of which vary both in their mode of onset, duration, and result

1. *The fulminant cases* — In this variety, the abrupt onset, absolutely without any premonitory symptoms, the rapid development of the disease, and its early fatal termination are all characteristic. A patient, previously quite healthy, is very suddenly seized with acute pain in the head and back of the neck, almost simultaneously, fever sets in, without chills or rigors, the patient who, half an hour previously was apparently healthy, being now found with intense headache, and a temperature of 103° or higher, vomiting at this stage is frequent, and one or two dark, offensive liquid motions may be passed involuntarily. Coma rapidly supervenes, with or without convulsions, and death occurs in five to eighteen hours.

In these cases the intensity of the poison is so great, and the effect on the nerve centres so pronounced that there is not sufficient time for the ordinary signs of the disease to be developed. Thus, for instance, there will be no retraction of the head, no rigidity of the limbs and no rash and the recognition of such cases early in an epidemic is a matter of extreme difficulty. If a *post mortem* examination be made in such a case, death having occurred within twelve hours (and I have been able to perform four such *post mortem*), there will be nothing evident beyond a general congestion of the cerebral and spinal meninges, with undue vascularity of the brain substance. There will be no characteristic lepto meningitis, but, if the case had lived from ten to twelve hours, a slight stickiness of the membranes would be perceptible, and if a cover-glass impression be made and suitably stained, the specific diplococcus would be found in large numbers.

The intensity of the poison has been so great, that there has not been time for the development of the usual pathological appearances, hence, if a case like this should be the first of a series, and if one's attention to the disease in question was not aroused by any collateral circumstances, the chances are that such a case would be wrongly diagnosed, and that "sunstroke," "plague," "congestion of the brain" or what not might be certified as the cause of death.

Should the patient live longer, say eighteen hours, the characteristic purulent exudation would be evident to the naked eye, and, though the symptoms attending such a case—sudden and intense headache, pain in the neck, fever, vomiting, diarrhoea, coma—might not be sufficient to ensure a correct diagnosis in the first case of a series, yet the light thrown on the case by the *post mortem* examination would leave no room for doubt, especially as the assistance obtained from bacteriology could be brought to bear unequivocal evidence on the point. I have seen seven cases of this kind, fatal in 5, 8, 8, 10, 12, 18 and 18 hours, respectively.

II *The acute cases* — In these the onset is also sudden, the patient complains of headache, pain in the back of the neck, and chilliness, fever soon sets in, with vomiting and diarrhoea, and, an interesting point in these cases is the occurrence of green stools and green vomited matter, for, in several instances where this occurred, Captain Rogers obtained, after death, a mixed culture of the diplococcus intracellularis meningitidis and the bacillus pyocyaneus.

As the case progresses, pains in the shoulders and low down in the neck occur, and are troublesome, pains in various joints supervene, the joints being tender, and occasionally swollen (a periarthritis), the limbs begin to feel heavy, become stiff and ultimately rigid, so that they are board like, and the patient complains of general tenderness and soreness.

At this stage the decubitus is generally characteristic, being lateral, with the head retracted (the chin pointing upwards), and the knees flexed. The chin cannot be brought down towards the sternum, the slightest effort to produce flexion resulting in great pain and distress.

The patient is apathetic, if shouted at, he tries to answer, and often puts his hand to the back of his neck, as if to show that his greatest distress was there. At times strabismus is discovered, the pupils are generally dilated, perhaps irregularly so.

Kernig's symptom is well marked, that is, if the patient be propped up in the bed in the sitting position, it will be found that extension of the leg on the thigh is impossible in consequence of contraction of the flexor muscles, although the leg can be freely extended if the patient is recumbent. This sign was found to be almost invariable, but never assisted in the diagnosis, as this had been arrived at long before in every instance.*

The apathy deepens into profound coma, in which the patient dies, usually in from two to six days, and convulsions are occasionally observed, though by no means a common symptom.

In such cases I have observed herpes on the lips, but never any other kind of rash for, as far as my experience goes, petechial and other rashes do not occur until later in the disease. Every acute case was examined most carefully for a rash, but in no instance was one discovered (apart from herpes) if the patient died within the first week.

The mortality of this variety is very great, at least 80 per cent are fatal, and as all the fulminant cases die, the death rate of the first two groups of this disease is fully 90 per cent.

If improvement occurs, it is very gradual, and a case may last as long as ten or twelve weeks before convalescence is established. The temperature is no guide in prognosticating a case, a severe case may have but little fever, the type of the fever may be continuous, remittent or intermittent, the temperature may fall to the normal point, and yet the patient may die. Prolonged unconsciousness is a bad sign, if the coma is never profound, so that the patient can be roused more or less, there is an element of hope. Continued sickness and diarrhoea are of bad omen, the occurrence of bronchitis or pneumonia adds greatly to the gravity of the case.

With returning consciousness, the other symptoms gradually clear, the pains become less, the rigidity of the limbs is not so marked, the pulse, which was quick and weak, improves in strength and quality, but improvement is very slow, and it is at this time that rashes of a petechial nature and extensive subcuticular mothings show themselves. The patient, by this time, is reduced to a skeleton, and, as his general condition improves, it not rarely happens that he is found to be mentally defective, a condition of dementia having set in which sometimes continues indefinitely. I have never seen mania as a result of this fever, but other nervous complications are met with, two which have come under my notice being aphasia, which passed away almost completely, and brachiomonoplegia, which also was quite recovered from.

III. The third division includes all cases that can be described as sub-acute and chronic.

In these the onset is more gradual, the patient feeling out of sorts for two or three days, and having a rise of temperature, with vague pains in the head and limbs, which are not at all characteristic and might easily be mistaken for malaria. The temperature is irregular, but, as a rule, is remittent in type, the tongue is moist and coated, there may be slight diarrhoea and vomiting or, on the other hand, the bowels may be constipated.

In a few days the headache becomes more pronounced, and is accompanied by pain and tenderness in the back of the neck, pain in the shoulders and rigidity of the

spine. In time elevation of the chin occurs, but there is not so great a tendency to drowsiness and coma as in the last series, in fact, cerebral symptoms may be absent for days.

The patient wastes, refuses food, and then a rash begins to appear composed of petechiae which ultimately enlarge to maculae the size of split peas which, in time, cover the patient from head to foot as thickly as if he had a severe attack of small-pox. In one case the rash was peculiar, as it occurred on the skin as large elevated papules dark brown, almost black, in colour, hard and tough, and persisted for weeks, the patient eventually recovering.

Having reached this state the patient may slowly recover, convalescence being very tardy, or he may slowly sink, lingering for weeks till, emaciated to a skeleton, he ultimately expires.

The mortality of these cases is also high, certainly 60 per cent, hence the death-rate of the first three series of the disease is not less than 75 per cent. Lastly, there is a series of cases that may be considered irregular and atypical, in which, with a sudden onset accompanied by high fever and marked head symptoms, there is sudden amelioration of all the symptoms, followed by rapid and complete recovery.

In my experience, limited to six cases, this type occurred in young patients between the ages of 12 and 17, who were removed at once from the place in which infection occurred and were treated promptly in an airy, well ventilated ward. In all these the symptoms were very marked, including retraction of the head and drowsiness, one of the patients, a girl of 14, was well, in four days and five others, boys of from 12 to 17 with symptoms equally marked, were well enough to be sent back to the reformatory in a week. All these cases gave rise to great anxiety at first, and I did not expect to see them all recover.

Termination—The mortality of the disease, as mentioned above, varies according to the nature of the individual cases.

The cases which fall under class I—Fulminant—are hopeless, being invariably fatal, and death from this cause is more sudden than from any other acute disease with which I am acquainted. The intensity of the poison is so great that the functions of the great nerve centres are arrested with alarming rapidity, death being due to coma, and occurring within a few hours.

In the cases belonging to group IV, the mortality is small, I have had no fatality in six cases, all these having occurred in young subjects.

In class II where the cases are acute, the mortality is high, 80 per cent of the cases coming under my observation having proved fatal. The onset in these is acute, and the fatal termination generally occurs between the second and sixth day, the course, however, is sometimes protracted, and I have known a case to prove fatal at the end of the seventh week. Here almost all the symptoms had cleared up, the temperature had been normal for more than three weeks, but the patient never gained ground and slowly died of exhaustion, despite careful diet and stimulation.

In this group of cases, also, one must watch for evidences of dementia when the disease becomes chronic. It is probably the result of interference with the vascular supply of the brain, the result of the increased intracranial pressure due to the sero-purulent effusion, and the mechanical result of pressure affecting the nerve cells may also be responsible for the result to some extent.

In group III, comprising the sub-acute and chronic cases, the mortality is not so great, amounting to about 60 per cent.

Of 53 cases that came under my notice, 7 belonged to group I, and all terminated fatally, a mortality of 100 per cent.

* In our experience of outbreaks of this disease in Central Jail, Bhagalpur, Kernig's symptom has proved most useful, as it is present often on the first or second day of the attack.—*Ed., Indian Medical Gazette*

Twenty five belonged to group II, of which 20, or 80 per cent, proved fatal, 16 belonged to group III, of which 9 died, or 60 per cent, and in group IV there were 6 cases, all of which recovered.

Of the total of 53 cases, 36 ended fatally, a mortality of 67.92 per cent.

Diagnosis—The cases occurring in groups II, III, and IV are generally easy of diagnosis, especially if one is on the watch for them during an epidemic, but a sporadic case may be mistaken for one of several diseases.

Malarial remittent fever, with head symptoms, bears some resemblance to the disease, but a microscopical examination of the blood will settle the diagnosis beyond dispute, hence no one ought to fall into error on this point.

Pneumonia with meningitis as a complication presents much greater difficulties, for a case of cerebro-spinal meningitis is occasionally complicated with pneumonia, and, without a reliable history to guide one, a mistake could easily be made. With a history to inform one, however, it will be shown that the onset and course were quite different in the case of pneumonia, the sudden rise of temperature, accompanied with pain in the chest, difficulty of breathing, cough and expectoration, followed, some days after, by head-symptoms, forming a picture very different from the disease under report, where sudden fever, with head-symptoms, pronounced and ever-increasing, was the starting point.

Tubercular meningitis has a much slower onset, pronounced symptoms not being present for days.

In the meningitis following on Bright's disease, also, the history of the case will prevent a mistake being made.

While an acute case of cerebro-spinal meningitis was under treatment at my hospital, a woman with acute croupous pneumonia was admitted she had secondary meningitis (pneumococcal), and I was able to demonstrate the points of similarity and of difference in the two cases.

The cases belonging to group I are sometimes extremely difficult to interpret correctly, and, if the first case of a series happened to be one of these, the chances are that its real nature would not be detected, when occurring among a number of other cases of the other three groups, however, one is ever watchful and is not likely to be deceived.

A fulminant case may be mistaken for heat-stroke, sunstroke, congestion of the brain or any other condition combining suddenness of onset with high fever and unconsciousness, one of my earlier cases, which died before I could see the patient, was diagnosed *post-mortem*, death occurred in eight hours, there was no sero-purulent exudation, but there was intense congestion of the vessels, with slight stickiness of

the membranes, and, had I not made cover-glass smear impressions, the case might easily have been returned as due to "congestion of the brain."

A word here with regard to the supposed resemblance of the disease to plague. I have had no difficulty in differentiating these two diseases, but, on one occasion a plague "Specialist," whose opinion was asked, made a very definite and emphatic diagnosis of plague in two cases on the same day. I ventured to state that the case was *not* plague (before the specialist was called in), but both patients were removed to hospital as plague cases, the one died the same night, a *post-mortem* examination was made the following morning, and the cause of death was found to be cerebro-spinal meningitis. The other patient was refused admission, being a case of ague.

In cases of doubt much assistance may be derived from lumbar puncture for, if the spinal canal be tapped in this region, below the termination of the cord in the filum terminale, the increased and altered cerebro-spinal fluid will be reached. The character of this fluid varies, it may be merely rather darker than natural, and slightly opaque; or opalescent, or full of cloudy material which subsides to the bottom of the vessel as a flocculent layer. In one or two cases of undoubted cerebro-spinal meningitis (verified *post-mortem*) I have failed to withdraw any fluid by lumbar puncture, but in the great majority of cases, the little operation has been successful, and a quantity of fluid, varying from an ounce to nearly two ounces, has been withdrawn, not rarely to the great benefit of the patient. On making cultures with this fluid, the diplococcus intracellularis has always been obtained, and cover-glass impressions show it in large numbers.

Prognosis—As will be gathered from the remarks on the mortality of the disease, the prognosis is very grave. Cerebro-spinal meningitis ranks amongst the most fatal of all acute diseases, every case except the few classed among the atypical or irregular ones, being fraught with grave danger.

Even among the sub-acute and chronic cases one sees patients in whom distinct improvement takes place and every hope of recovery is held out, but a certain point having been reached, the patient makes no further progress his condition remains stationary for a while, and then he slowly loses ground, emaciates, and eventually dies of exhaustion.

In estimating the probable chances of recovery when improvement begins to take place, the occasional sequelæ of the disease must not be lost sight of, e.g., dementia, aphasia and paralyses of various kinds.

The best chance of recovery is afforded when a patient is promptly removed from the

infected spot and is treated in an airy ward, especial care being bestowed on the patient's diet for, as a rule, such cases have to be fed frequently and in small quantities at a time.

The occurrence of complications of the respiratory organs (pneumonia and bronchitis,) adds greatly to the danger of a case and protracted vomiting and diarrhoea are bad symptoms.

Profound coma is of very bad prognostic omen, but the less complete forms can be recovered from, in fact, it is surprising to witness the rapidity with which the head-symptoms disappear in the atypical cases, patients who appeared to be in a desperate condition one morning, being found quite conscious and well on the way to improvement the next day, and, further, they are well enough to be discharged within a week.

Treatment—The general measures to be adopted when the disease appears in a place, such as an emigration depôt, where a large number of human beings are crowded together, are to evacuate the sleeping sheds in which cases have occurred. These buildings should be unroofed, so as to admit air and sunshine, the floors, if of earth, should be dug up to the depth of two inches, and the walls and sleeping platforms should be thoroughly washed with a solution of perchloride of mercury. The walls should then be lime-washed, and fresh earth, obtained from a healthy locality, should be filled into the floor, the latter having previously been thoroughly soaked with a strong solution of perchloride.

By these means I put a stop to the disease in the single men's shed at No 21, Garden Reach, there had been eight cases in that particular shed, and, when the emigrants were allowed to return, after the measures described above were carefully carried out, no further cases occurred, though there were attacks in various other buildings in the depôt.

These measures were sneered at by a senior Medical Officer, who was inclined to call all these cases "Remittent Fever," he had not the direct evidence furnished by a *post-mortem* examination to guide him, however, though two of the cases died in his hospital, and were returned as "Remittent Fever" (no *post-mortem* examination having been made)!

On the occurrence of several such cases in an emigration depôt, shortly before the despatch of a vessel with emigrants to one of the colonies, it has to be decided whether the vessel should be allowed to proceed with the human freight or not. On one occasion I decided to postpone the departure of a vessel under such circumstances, and the procedure was severely criticized in some quarters, but I think it was only a matter of common sense. If cases occurred among the emigrants at the time they were about to embark, they would certainly take the infection with

them. Then conditions of life on board would not be so favourable as those existing on shore, as they would be more crowded, and would have less chance of spreading out as they are accustomed to do in the grounds of a depôt, and, therefore, I think the chance of infection would be greater, and especially would this hold good during the first few days of the voyage, and in rough weather, when the greater number would be sea-sick and unable to go up on deck.

Cerebro-spinal meningitis, however, does not tend to spread very much or to attack large numbers of people as typhus, measles and scarlatina would do. We do not know how the infection spreads, it does not appear to be diffused by mere contact, for the instances are rare where cases have spread to those sleeping on each side of an infected person, and I have seen a woman who suckled her child all through an attack, and yet the child escaped the disease.

We think that the poison is to be found in the superficial layers of the soil, we cannot tell what conditions predispose to the spread of the diseases, but this is trespassing on Captain Roger's domain, as he is writing on the Pathology and Bacteriology of the disease.

As to the treatment of a case—Immediate removal from the infected place is essential, the patient should be kept in a quiet, cheerful room, an ice-bag to the head is comforting, and general measures of treatment are indicated. Morphine is useful, in small doses, hypodermically, if the patient is excited and sleepless, in the sub-acute and chronic cases, the diet should be carefully attended to, the patient being given liquid nutritious food frequently and in small quantities.

If the temperature is high, the surface should be sponged with tepid water, and the action of the skin encouraged by diaphoretics.

In all cases if there is much retraction of the head, the chin pointing upwards, and the patient's condition is growing serious, lumbar puncture should be practised without loss of time. It is a simple operation, does no harm and often does good, that is, in four very grave cases where puncture was resorted to, the removal of from six drachms to two ounces of fluid was followed by speedy improvement.

After convalescence is established, or rather, after the subsidence of the acute symptoms, great care should be taken in the feeding of the patient, and every attempt should be made to promote gain of body weight. It is often disappointing to find a patient who has safely been tided through the dangers of the early stages of the disease sink eventually from exhaustion. In such cases, cod-liver oil, with iron, quinine and strychnine is indicated, and the diet should be nutritious and easily assimilable.

The stiffness and pains in the neck and shoulders sometimes linger for days and weeks,

hot applications and stimulant embrocations are then indicated

To sum up the treatment, it may be said that fulminant cases will die whatever treatment be adopted, while the "atypical" ones will recover with mere rest in bed. In the acute and sub-acute ones, general measures must be adopted, and symptoms should be treated on common sense principles, but it must be remembered that the sooner a case is removed from the place of infection, the better will be the chance of recovery

NOTE ON A BACTERIOLOGICAL EXAMINATION OF CEREBRO-SPINAL FEVER CASES IN THE CALCUTTA EMIGRATION DEPOTS, 1900

By LEONARD ROGERS, M.D. M.R.O.P. I.M.S.

BETWEEN the middle of July and that of September examinations were made of five cases of cerebro-spinal fever occurring in the emigration depôts under Major E. H. Brown, I.M.S., who gave me every assistance in obtaining the necessary material from the cases in his hospital in Bhowanipur. The cases occurred at very irregular intervals, and as at the time I visited the depôts I found that the sheds had been thoroughly disinfected in those parts where the cases had occurred, it was useless to attempt to make any cultures from the floors, &c., while the great difficulty of growing the *diplococcus intracellularis* even from cases of the disease renders it almost impossible to expect to obtain it from soil which must be teeming with other organisms which will grow much more rapidly, and accounts for the failure of all observers to isolate the organisms from the surroundings of cases. The present inquiry, then, was necessarily limited to a bacteriological examination of fluids obtained from the cases by lumbar puncture and of material taken *post-mortem* in the fatal cases.

Previous work—Although the literature of the subject is very extensive, yet but few modern investigations of this disease have been made, only a brief reference to which will be necessary here. The following facts are taken from the admirable monograph of Councilman, Mallory and Wright. Leichtenstern in 1886 found cocci in the white cells in meningitis, while in the following year Weichselbaum described the *diplococcus intracellularis* in six cases of cerebro-spinal meningitis. Subcutaneous inoculations of this organism in rabbits, &c., gave negative results, but when injected into the membranes of the brain meningitis was set up. In 1895 Weichselbaum's work was confirmed by Jager, who found the same *diplococcus* in twelve cases, while in the following year Heubne found it in fluid removed by lumbar puncture in nine typical cases of the disease, six of which showed the ordinary signs *post-mortem* of cerebro-spinal meningitis, and others have since reported similar results. The most important recent contribution to the subject is that of the American writers mentioned above, who found the *diplococcus post-mortem* in 31 out of 35 cases, while in one of the others it was found

during life, and the other three were chronic cases, but they point out that it may be difficult to cultivate even when easily seen in large numbers under the microscope. Further, the examination of fluid removed by lumbar puncture showed the organism in 38 out of 55 cases, the negative ones being chiefly those of long duration, many of which were recovering, and they point out that by using sufficient fluid in several tubes the organism can usually be cultivated in acute cases. In India a similar organism has been isolated both from cases in the Bhagulpore Central Jail under Major W. J. Buchanan, I.M.S., and from others in the Medical College Hospital, by Major F. O. Drury, Professor of Pathology.

Present results—Owing to the sporadic nature of the cases only five could be examined by me. The clinical features of these are dealt with in Major Brown's report, so only the bacteriological examinations will be given here. On July 23rd some cerebro-spinal fluid was obtained by lumbar puncture in one case, and material was obtained from a *post-mortem* from another case, both from Mr. Mitchell's cooly depôt. From the former four agar tubes were inoculated, and on the following day two of the tubes only showed from one to four small discrete semi-transparent colonies. Those inoculated from the purulent deposits in the membranes of the brain of the fatal case showed numerous small glistening colonies along the track of the needle on the surface of the agar. On inoculation from these into bouillon tubes the broth became slightly cloudy with a slight flocculent precipitate. On the second day the cultures which were made from the brain showed contamination with the *bacillus pyocyaneus*.

Microscopical specimens made from the brain deposits showed numerous *diplococci*, mainly in the white polymorphonuclear corpuscles, which were decolourised by Gram's method of staining, and had all the appearances of the *diplococcus intracellularis*, as had also the cultures above described, and they were also found in the fluid withdrawn by lumbar puncture. On glycerine agar the isolated organisms were found to grow much more readily than on plain agar, and they first formed semi-opaque sticky rounded colonies, which subsequently became confluent. Their growth on gelatine could not be tested on account of the high temperature during the period I was working.

Subsequently I obtained similar *diplococci* from fluid removed by lumbar puncture in another case, while in two more cases I obtained them both by culture and by microscopical examination from the pus on the surface of the brain in two other fatal cases of cerebro-spinal meningitis, all of which presented the same characteristics as those mentioned above. On plain agar the organisms soon died out after a few transfers just as Councilman found in his cases, this being a characteristic feature of this organism.

Through the kindness of Major Brown I was able to inoculate a monkey by lumbar puncture

into the lower part of the spinal meninges with a three days old sub-culture on glycerine agar, but although I feel sure that some of the injected material must have reached the membranes, yet the animal remained in perfect health, and showed no symptoms whatever. Probably the culture had already lost its virulence, as it had been grown for some days first on ordinary agar, so that this experiment cannot be held to prove that the monkey is insusceptible to the disease, and unfortunately I did not get an opportunity of repeating the experiment with fresher material. On the other hand, the negative result affords proof that the organism isolated was not any of the ordinary pus producing cocci, and agrees with the observations of Councilman that it is very difficult to produce meningitis in any animals with the diplococcus intracellularis, they having only succeeded in producing the disease in one goat, which I hoped to have tried, but was prevented by the failure of arrangements for this experiment.

The above results only serve to show that the diplococcus intracellularis of Weichselbaum was present in each of the five cases examined, and that no other organism was found (if we except the probably accidental contamination of some of the inoculations from pus from the brains of fatal cases with the bacillus pyocyaneus), proving that these cases of cerebro-spinal meningitis have a similar etiology to cases in Europe and America, while the observations are too limited to throw any fresh light on the very difficult subject of the etiology of the disease.

A PLEA FOR THE EFFICIENT REGISTRATION OF OPERATIONS FOR STONE IN THE BLADDER IN INDIA

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A CAREFUL perusal of the Special Stone Number of this Journal should convince the unbiased reader that litholapaxy is the operation of election for all uncomplicated calculi in old and young patients of both sexes. The conditions which render a calculus complicated are somewhat numerous. It may be encysted in the bladder, and then all surgeons are agreed that a suprapubic lithotomy is the correct operation to perform, if the removal of the stone is deemed necessary in order to relieve suffering or save life. A calculus may also be complicated by great enlargement of the prostate, rendering litholapaxy impracticable, and then there can be little doubt that it should be removed through a suprapubic incision. Then, again, the calculus may be complicated by pouching of the bladder and chronic cystitis with all its attendant evils. In such cases a perineal lithotomy, which

after all is nothing more than a modified median or a modified lateral lithotomy, will suggest itself as the best method of extracting the stone, and at the same time draining the bladder and giving it rest. Finally, the stone may be complicated by reason of its great size or excessive hardness, and its removal by ordinary litholapaxy being impossible, the surgeon is called upon to decide between a suprapubic lithotomy or some form of perineal lithotomy. The best method of dealing with this last variety of complicated calculi is the problem which at the present juncture is pressing for solution, and in order to solve it I would urge the necessity of recording for some few years to come, all operations undertaken in India for the removal of very large or very hard calculi not amenable to Bigelow's method of litholapaxy. This problem must be worked out by Civil Surgeons living in the calculous districts of India, and we must solve it for ourselves as we did the question of litholapaxy in boys. It is simply futile to expect that we shall receive light or guidance on our way from surgeons in Europe or America. It is a duty which we owe to ourselves and the many patients who seek our aid that this vexed question should be settled once and for all. The duties of Civil Surgeons are so multifarious that they have neither the time nor the inclination to send a record of their individual experiences of interesting stone cases to this Journal for publication, but all have time enough to forward at the end of each year a short return to the Inspector-General of Civil Hospitals of the Province in which they may be serving, embodying all necessary data connected with every stone case treated during that year. Such a return should include the following information—Age, sex, caste of patient, duration of disease, date of operation, time in hospital after operation, weight and composition of stone, nature of operation performed, result. It would only be required from surgeons practising in the calculous districts of India. In Burma, the Madras Presidency, and even in Lower Bengal, such returns would not be required. For all practical purposes they would only be required in the Punjab, North-West Provinces and Oudh and in the Bombay Presidency. The clerks in the Inspector-General's office could easily summarize the combined information into one comprehensive table, classifying the number of cases according to age. Cases under fifteen years of age should be arranged in quinquennial periods, those above fifteen years in decennial periods. I cannot think that heads of Local Governments would offer any objection to the incorporation of such a table in the Medical Reports forwarded annually, and so in the course of a few years a mass of most valuable information would be available, and we should then be in a position to draw safe conclusions.

sions regarding the mortality which follows the various operations undertaken for the relief of stone in the bladder at the different periods of life. Some five years ago, wishing to compare the relative mortality of litholapaxy, lateral lithotomy, median lithotomy and suprapubic lithotomy in boys in India, I consulted the published Medical Reports of the different Local Governments. I need hardly say I consulted them in vain. The reports merely stated that a certain number of litholapaxies, lateral lithotomies, &c., had been performed, but whether on men, women or children it was impossible to tell, and this absence of necessary information in these reports continues to the present day. I was therefore compelled to write to my friend the Inspector-General of Civil Hospitals in the Punjab, Colonel O'Connell Raye, who called for returns from the Civil Surgeons serving in the circle of his superintendence, and the necessary data having been kindly placed at my disposal, I was enabled to show that in the Punjab during the year 1895 the rate of mortality of litholapaxy in boys under fifteen years of age was less than half of that which followed lateral lithotomy in this same class of patient. About this time I was anxious to find out the rate of mortality of suprapubic lithotomy in India in patients at different periods of life, but was obliged to content myself with the knowledge that out of 147 suprapubic lithotomies performed during five years on patients at all periods of life 61 had died. How many patients out of the 147 were boys or how many were men, it was impossible to say, and of course no information was to be had as to the average weight of the calculi removed. Some years ago in the Medical Reports of the North-West Provinces a feeble attempt was made to classify the lateral lithotomies performed in that part of India, in patients at different period of life, but for some reason or another which I could never fathom, this small measure of information was considered too precise, and at the present time if one wishes to find out how many stone operations are performed on boys and men in a given year in the North-West Provinces he must do as Captain Henry Smith, Civil Surgeon of Jullundur, did when collecting the very valuable table of statistics which formed one of the salient features of the Special Stone Number of this Journal. In other words, he must depute a clerk to visit the hospitals and dispensaries, and extract the required information from the Register of Operations kept at each medical institution visited. It may be urged that the plan I now suggest would add to the already large amount of clerical work which the hard worked Civil Surgeon has to do, and that if carried out in the case of operations for stone in the bladder to-day, that perhaps, to-morrow, some one might suggest a

similar plan for recording all operations for strangulated hernia. There is of course something to be said for this view of the case. On the other hand, it should be borne in mind that in the surgery of stone in the bladder surgeons in India owing to their peculiar advantages, lead surgical opinion in Europe and America, and do not follow it, whilst in most departments of surgical practice they tread rather cautiously in the footsteps of their brethren at home. And so I think an exception might be made in the registration of stone operations in India. Be this as it may, the problem we have to solve is, what is the best method of dealing with very large or hard calculi which cannot be crushed by the largest lithotrite which can be introduced in the bladder per urethram. We have to decide what is the best operation *per se*, and not what is the safest operation for the general surgeon when he meets with one of these very difficult cases. At the discussion which took place at the meeting of the British Medical Association at Ipswich on the best method of removing very large calculi from the bladder this question was debated by several speakers from the standpoint of the general surgeon. Surgeons living in the calculous districts of India, and who are equally expert in using the knife and the lithotrite, must however take a broader view of the subject and decide for themselves which of the two operations, perineal lithotrity or suprapubic lithotomy, is intrinsically the better. So far as I know, there have not yet appeared any statistics worth the name, showing the mortality which follows suprapubic lithotomy in England when undertaken for very large stones in male adults. A record of fifty or sixty operations of this kind is of little or no value. We require numbers, and until a table of at least 300 cases is collected in India, giving the average weight of the stones removed, and the average age of the patients treated, the question must be considered as undecided. Personally I lean to the opinion that the solution of the problem will be found in some form of perineal lithotrity and not in suprapubic lithotomy. Suprapubic lithotomy is a much easier operation to perform than a perineal lithotrity. All the structures divided by the surgeon's knife in the course of a suprapubic lithotomy are directly under his eye, and there are no anatomical difficulties to be overcome or avoided, and still it has never been a popular operation with surgeons in India. In India the death-rate attending it has been very high, due no doubt to the fact that it is, as a rule, only performed in desperate cases and for very large calculi. Do what we can I fear that the death-rate in both suprapubic lithotomy and perineal lithotrity when performed for very large calculi in men over 50 years of age will be always very considerable. There

are some grounds, however, for hoping that by a well planned perineal lithotomy we may be able to reduce the rate of mortality in such cases. My grounds for thinking so are these. For all practical purposes it may be laid down as a surgical axiom that all other things being equal, the rate of mortality following operations for stone in the bladder increases in direct ratio with the size of the calculus and the age of the patient. In lateral lithotomy this rule holds good almost invariably. Perineal lithotomy is an improved and modified form of lateral lithotomy. The two factors which swell the death-rate are increased size of stone and increased age. In a well executed perineal lithotomy, by means of a judicious use of the giant lithotrite, we can eliminate one of the deadly factors by

diminishing the bulk of the stone before any effort is made to extract it through a small incision in the prostate. Hence I am hopeful that by means of a well executed perineal lithotomy, we may find a partial solution of this very difficult problem in the surgery of stone in the bladder. The age of the patient we cannot lessen, and therefore the extraction of very large calculi from the bladders of men above the middle period of life will always be attended by a high rate of mortality. I trust that the suggestions I have made may bear some fruit, and that Civil Surgeons in India may record from time to time in the columns of this Journal their experiences in the treatment of very large or very hard calculi not amenable to litholapaxy.

A CASE OF ENCYSTED STONE IN THE BLADDER—REMOVAL BY LITHOLAPAXY

By R. MACRAE, M.D.

LIEUT. COLONEL, I.M.S.,
Superintendent, Miford Hospital, Dacca

MUCH has appeared of late in the Medical Journals on the subject of stone in the bladder, and the *Indian Medical Gazette* has devoted a special number to its discussion and the various modes of treatment, but very little mention has been made of encysted stone, and most text-books refer but very briefly to the subject. Having recently had occasion to operate on a case of encysted stone, I think it may be of interest to record its history and the manner in which it was dealt with. It would, I consider, be instructive if surgeons, whose experience has been very large, would inform those of us who do not possess the same opportunities, how they treat such exceptional cases.

I call them exceptional because I am inclined to think the condition is rare.

One, of course, sees occasional allusions made to "encysted stone" and some such expression as the following used "the stone was encysted and crushed with great difficulty," but that conveys very little information, and it is difficult to realise how it could have been crushed at all.

Personally I cannot claim to have had a large experience of stone as compared with that of surgeons in other parts of India outside Bengal, where stone is not a common disease, but I have had a fair experience of litholapaxy, with considerable success, having performed 126 operations consecutively without a death on patients of all ages from 2 up to 80 years. I have met with sacculated and pouched bladders, in which conditions stones and fragments of stones are difficult to grasp, but I have not previously met with a case in which the stone was firmly encysted.

I may observe that there is also no record of such in this large hospital. It is true that the numbers met with are comparatively small, stone

1895		1896		1897		1898		1899		TOTAL	
Litholapaxy		Litholapaxy		Litholapaxy		Litholapaxy		Litholapaxy		Litholapaxy	
Lithotomy		Lithotomy		Lithotomy		Lithotomy		Lithotomy		Lithotomy	
External Urethrotomy		External Urethrotomy		External Urethrotomy		External Urethrotomy		External Urethrotomy		External Urethrotomy	
Urethral Calculus removed		Urethral Calculus removed		Urethral Calculus removed		Urethral Calculus removed		Urethral Calculus removed		Urethral Calculus removed	
Suprapubic Lithotomy		Suprapubic Lithotomy		Suprapubic Lithotomy		Suprapubic Lithotomy		Suprapubic Lithotomy		Suprapubic Lithotomy	
Total		Total		Total		Total		Total		Total	
18		15		12		28		26		94	
1		1		1		1		2		3	
		7		2				2		6	
19		1		5		6		9		27	
		24		20		29		39		1	
										131	

being, as I have stated, not a common disease in Eastern Bengal

I subjoin a table showing the total operations for stone in the Mitford Hospital during the five years ending December 1899. All the cases were successful, and at least ten districts contributed to the total of 131.

For the notes of the case I am indebted to Assistant-Surgeon Gopal Chandra Chatterjea, Teacher of Surgery at the Medical School, who very carefully carried out the details of the treatment after operation.

Abdul Sobhan, a Mahammedan from Tipperah district, aged about 30, fairly healthy, was admitted into the Mitford Hospital, on 12th September 1900, complaining of urinary trouble. Indian surgeons will appreciate the difficulty of obtaining a connected history from hospital patients, but it was elicited that four years ago his troubles began by severe pain in the left lumbar region, which, he maintained, lasted for about two months, then commenced increased frequency of micturition. Some hæmaturia was also observed at this period. It is noted that also about this time he suffered from interruption to the stream of urine, which he attributed to some obstruction in the front of his penis (possibly he may have passed a small calculus by the urethra).

He states that during the past two years he has been passing dirty urine.

On admission his general condition was fair, he was passing urine from 20 to 25 times in 24 hours, the urine was turbid, S. G. 1010, contained albumen and was neutral in reaction.

A stone was found in the bladder, and he was prepared for operation on the 14th.

When he was put before me on the table, the diagnosis had only gone so far as the fact of a stone being present.

On sounding the bladder I found the stone fixed on the left side high up, and on introducing a few ounces of weak boracic lotion, the diagnosis was facilitated. It was felt that the stone was firmly fixed, but that a considerable portion which could be distinctly defined with the beak of the sound, projected into the cavity of the bladder. It was for a moment fancied that the stone was fixed in the left ureter, but this idea was abandoned when it was noted that it occupied such a high position in the bladder, and that there were no signs or symptoms pointing to obstruction of the ureter.

A lithotrite was now introduced and applied to the vesical portion of the calculus. Efforts to remove the calculus from its position having proved unsuccessful, the vesical portion was broken off and crushed in the cavity of the bladder in the ordinary way. By this means 333 grains of a stone, mainly of uric acid, were removed.

On again introducing a sound and exploring the left side of the bladder, the beak was felt to travel over a small surface of stone. On making deep pressure in the abdomen with the hand a large stone could still be felt between the beak of the sound and the hand. This was beyond the reach of a finger in the rectum. There was nothing that could be grasped by a lithotrite, and it was obvious that any continued efforts in this direction would seriously injure the bladder.

It was determined to wait until the irritation produced by the introduction of instruments had subsided, before performing a suprapubic operation. Meantime it was resolved to introduce into the bladder twice daily, some ounces of warm boracic lotion with a view, not only to clean out the bladder, but in the hope that the mechanical dilatation thereby caused might serve to widen the mouth of the sac, loosen the stone, and permit it to escape into the cavity of the bladder.

The patient felt much relieved after the operation, had a very slight rise of temperature the next morning, which soon fell to normal and continued so.

The injection of the bladder was continued morning and evening by Assistant Surgeon Gopal Chandra Chatterjea until the 30th, when the patient complained of interruption to the stream of urine. He was again placed on the operating table on the morning of the 1st, and I found the stone free in the cavity, and crushed and removed without difficulty fragments of uric acid weighing 497 grains.

The patient was practically well the next day, and left the hospital free from all his troubles on the 6th October.

It would be rash to argue from the result of one case that the mechanical dilatation of the bladder with fluid had succeeded in freeing the encysted stone from its sac, but if I met with a similar case I should certainly give it a trial before performing a suprapubic or other operation.

No doubt cases would occur in which the bladder would resent the introduction of much fluid.

Since writing the above another patient has been treated and found to be suffering from stone adherent to the bladder.

The patient was a female, also from the Tipperah district. She was rickety to an extreme degree, her limbs being greatly deformed. She had, however, after the fashion of this country, contracted a marriage, and became pregnant about three years ago. The child was removed instrumentally in a district hospital, and since then her urinary troubles commenced.

She came to this hospital complaining of incontinence of urine. Examination of the bladder disclosed that it was contracted, and a stone was felt.

The urethra was capacious and dilated and it was found impossible to inject the bladder, which was so contracted that a lithotrite could not be used.

The urethra being already dilated, the rather rough method of further dilation was adopted, and a finger introduced into the bladder. A stone was found projecting like a nipple, and adherent to the anterior surface of the bladder. Roundabout the stone the surface of the bladder was incrustated with adherent calculus matter. There was no difficulty in displacing the stone which proved to be phosphatic, and weighed 64 grains. The adhering calculus matter was also removed. The patient is still in hospital improving.

A TWENTY-TWO OUNCE STONE IN THE BLADDER

BY HENRY SMITH, M.D., M.CH.,

CAPTAIN, I.M.S.,

Civil Surgeon, Jallundur

THE following case is, I think, of sufficient interest to publish —

Miriam Bukshah, aged 50 years, and from appearance 60 years or over, came into hospital on the 30th August

1900, suffering from stone in the bladder for over 30 years and from chronic Bright's disease for an indefinite period. The bladder was in a bad condition. On the 31st August under chloroform I passed a Weiss' A number lithotrite with ease, and at once discovered that the stone was far above the size on which it could get any catch. The patient was immediately put to bed, and a messenger despatched to a neighbouring station for a No 26 lithotrite with a view to perineal lithotomy. On the 31st he had trouble in passing urine, and his temperature was 102°. On the 1st September temperature was 99°. The instrument arrived on September 2nd, and the patient was found on the morning of the 3rd to have extravasation of urine in the penis and scrotum. I could not ascertain to my own satisfaction if attempts at passing catheters had been made to relieve the difficulty in micturition. I cannot understand the extravasation otherwise as there was no stricture. I made incisions into the cellular tissue freely and got out as much as would readily come of the decomposed material from the extravasation area, washed it with a bichloride solution and wrapped it up in mercury wool. I decided to relieve the extravasation by opening the bladder from the perineum, and at the same time to remove the stone. I therefore made a lateral lithotomy wound which admitted the index finger, passed the No 26 lithotrite, and without any difficulty made the first three or four fractures in the stone. To get hold of the remaining fragments was not an easy matter as the lithotrite felt as if it were pushed into a heap of stones broken for the road. I extracted the fragments with a small lithotomy forceps. The fragments weighed 22 ounces. The core was uric acid, and the cortical portion about half an inch thick, or rather less was bone earth and looked like white marble in appearance. It was not a soft stone, but certainly not a hard one. I consider it under medium hardness. I screwed home the No 26 lithotrite with ease.

The same evening the patient had some post operation shock, for which 50 ounces of normal saline solution were infused into the cellular tissues of the breasts. This pulled him together.

On the 4th, temperature 99° morning and evening, otherwise he was getting on well.

On the 5th, temperature 100° in the morning, 102° in the evening, otherwise well.

On the 6th, severe diarrhoea set in, temperature 101° in the morning and evening.

On the 7th, temperature 100.4° morning and evening, diarrhoea severe.

On the 8th, temperature 100° morning and evening, diarrhoea severe. His pulse was getting very weak, and half a gallon of normal saline was infused, which again pulled him together.

On the 9th, temperature 102° morning and evening, diarrhoea continued.

On the 10th, temperature 100° morning and evening, diarrhoea continued, hiccough set in.

On the 11th, temperature 100° morning and evening, diarrhoea and hiccough continued, pulse again weak, so a further half gallon of normal saline was infused.

On the 12th, temperature 100° morning and evening, diarrhoea and hiccough continued.

On the 14th, condition same.

On the 15th, patient died.

I now think I made a mistake in this case in not opening the membranous urethra simply as a step towards the relief of the extravasation, and in not waiting until the extravasation had cleared up before removing the stone. I probably would have done so had I thought the stone was of such gigantic magnitude. I think that but for the Bright's disease and the extravasation or either of them he would have made a good

recovery, as it was, he lived twelve days. The obstinate diarrhoea was, I consider, the cause of death, whether it was due to septic absorption from extravasation, or to the Bright's disease, or both, would be difficult to say. The operation was simple and occupied about half an hour.

As the operation of perineal lithotomy for large stones is but in the evolution stage, a few points might be of interest in the particular case. The No 26 lithotrite having parallel action jaws grasped the whole stone with ease, and also the large fragments. I found when removing the small fragments that a small lithotomy forceps caught them easily, but many of them had sharp projecting edges which I had to let go and re-insert a small lithotrite to break up further. It struck me that the lithotrite from its power and ease of application was the instrument to put in the first few fractures, after that a really stout small lithotomy forceps made with the proportions of a dental forceps but much longer in the handles and with a row of serrated interlocking cutters round the border of the jaws would crush the fragments and clip off the projecting edges of the fragments above referred to. I had a pair of such forceps made locally, and had occasion to use them to day in a case in which there were three stones about an ounce each in weight, but in which it was impossible to get instruments passed for a litholapaxy on account of prostatic conditions. The clippers round the borders of the jaws of the forceps acted admirably removing all projecting points. Such a clipping forceps I regard as essential in perineal lithotomy for stones of hard or medium density so as to remove the sharp corners of the fragments which project beyond the margin of an ordinary forceps. Such forceps though quite incapable of dealing with a large hard stone in the whole state would be quite capable of dealing with the fragments once the stone has a few fractures through the body, the keystone of the arch being, so to speak, broken, the remainder is easy.

NOTES ON THE OCCURRENCE OF CALCULI IN THE KIDNEYS AND URETERS

By W. H. HENDERSON, F.R.S.I.,

Lt Col., I.M.S.,

Civil Surgeon, Poona

My experience in Hyderabad (Sinde) confirms that of other surgeons as to the rarity of renal calculi in India. During my stay in Sind, amongst the numerous cases of stone which came under my observation, I can, on referring to my notes, only find records of two cases, one of renal and one of ureteral calculi. In the renal case the presence of the stone was of long standing. There was a history of continued deep-seated pain radiating to the testicle

and thigh, hæmaturia followed by turbidity of the urine, which on examination contained pus. On admission over the right loin, there was a large fluctuating tumour. The operation was simplicity itself. I cut down and opened the pyonephrosis and discovered in the cavity a beautifully shaped calculus which had evidently occupied the pelvis and calyces of the kidney for a very considerable time. The cavity was irrigated, closed and drained. The patient who was difficult to convince that the stone was not from the bladder, made an excellent recovery.

The next case was that of an Amil Government official, who had for some weeks been complaining of pain over the loins, radiating to the right testicle and thigh. One night he sent for me as he was in great agony, when I found him suffering from renal colic. All his symptoms pointed to a calculus having entered his ureter. The attack passed off, but I could discover no calculus in the bladder or procure any evidence of one having been passed by the urethra. After a few days there was a second attack with frequent recurrences. Learning at this time from Murray's "Rough Notes on Remedies" of the efficacy of belladonna in such cases, I determined to prescribe this drug before resorting to an operation. This treatment was eminently satisfactory. At the commencement of the next attack he began to take this medicine with the result that the stone passed down the ureter and was found in the bladder the following morning, warm baths, fomentations, and the drug considerably lessening his pain. As the calculus appeared to be of considerable size, I determined to crush it as soon as possible. The patient, contrary to my advice, continued the medicine and passed the stone, weighing about thirty grains, resembling a date stone in shape by the urethra after an exceedingly *mauvais quart d'heure*.

These two cases are my sole experience during a period of four years in a district where vesical calculus is notoriously prevalent.

With reference to the question as to where bladder calculi have their origin, I was much impressed while in Sindh with the frequency with which they appeared to take form in the bladder itself. In an article of mine which was published in the July number of the *Indian Medical Gazette* for the year 1898 I drew attention to this. On several occasions patients, specially children, have been admitted to the Hyderabad Hospital with all the symptoms of stone and in whom the sound has confirmed the diagnosis. But the concretion has been attached to the bladder wall and has therefore been left alone. The patient at some future time has returned with a calculus free in the bladder.

I think this formation of calculi, other than the purely phosphatic, is more common in this situation than is generally supposed.

A Mirror of Hospital Practice.

CASE OF SNAKE BITE TREATED WITH CALMETTE'S ANTIVENINE, RECOVERY

By A. SCOFFREID,

COLONEL I.M.S.,

Administrative Medical Officer, C.P.

TOWARDS the end of 1899 I caused all the Government hospitals and dispensaries (branch as well as main) in the Central Provinces to be provided with a supply of Calmette's antivenine and a suitable syringe for injecting it, issuing at the same time full instructions as to how the remedy was to be used, and a notice in the vernacular to the Police requesting them to inform the people that a new cure for snake-bite had been discovered, and urging the necessity of having persons bitten taken for treatment to the nearest dispensary, with the least possible delay after the part had been ligatured where this was practicable. Civil Surgeons were further asked to be good enough to report to my office any instances which came to their notice in which the antivenine had been used, with the result. Up to date I have received the report of only one such case, and although it is incomplete in one important particular, *viz*, the verified identification of the snake, perhaps you may consider the details, as observed and furnished by Mr. Hogan, Civil Surgeon of Mandla, in which district the patient resided, worthy of a place in your columns. They are as follows—

Dhanoo Lohar, aged 35, a resident of Deori Dadar village, who had been sleeping in the verandah of his hut, awakened his wife at about 1 A.M. of the 10th August 1900 by calling out that he had been bitten on the shoulder by a snake, which he had seized and thrown down, and which he afterwards said was about three feet long, and, in his opinion, a Krait, judging from its appearance as it glided away. Difficulty of speech and breathing is said to have set in immediately, on which the woman sent for Mr. Fryer, one of the Patpara Missionaries, who arrived about 6.30 A.M. of the same date, or 5½ hours after the alleged occurrence. That gentleman then found two small punctures, scarcely half an inch apart, which he incised deeply, causing blood, the colour of which he described as more brick coloured than natural, to flow freely for about 25 minutes. At this time the patient was not unconscious, but spoke very indistinctly. He was then, after the administration of ammoniac carbonas, ordered to be sent to the main dispensary at Mandla, which however he did not reach until 6.45 P.M. of the 11th August, or 41 hours 45 minutes after being bitten.

Condition on admission to hospital—No pulse at wrist unconscious, respiration stertorous, irregular and spasmodic—great difficulty in swallowing, pupils widely dilated, double ptosis. The treatment adopted was to wash the incisions which had been made by Mr. Fryer with a solution of chloride of lime—1 in 60—while the surrounding skin was cleansed with soap and water, followed by boric acid lotion. Then, at 7.20 P.M. 10 C.Cs of antivenine were injected into the subcutaneous cellular tissue about an inch below the site of puncture.

After progress—Beyond some restlessness, no change was noticed until 4 A.M. of the 12th, when a thready pulse could be felt, but not counted, at the wrist—respiration 14 per minute. At 7 A.M. the patient answered questions when spoken to loudly, was drowsy, mucous rattling in throat.

At 9 A.M. could sit up with a little help, said he felt better and would recover, ptosis still present, complained of pain and constriction in the throat—dysphagia. He was now given small quantities of coffee frequently.

At 12 noon the pulse was 96, respiration 28 per minute, and temperature 100°. The patient said he felt better and asked for food, on which *peck* (rice water) and tea were given him.

At 4 P.M. the pulse was 100, respiration 30, temperature 101.8°. From this date onwards steady improvement continued, the mind becoming clear on the 13th and the ptosis and dysphagia completely disappearing by the 16th. Some local inflammation took place at the seat of injection, but had subsided when the patient was discharged from hospital well on the 28th August.

Remarks—This, as I have already said, is an admittedly imperfect case, and I only send it to you as contributing something towards our somewhat scanty clinical record of the effects of Calmette's antivenine, and as a possible encouragement to others who may be endeavouring to bring it into more extensive use in this country. That the snake was a venomous one there can, I think, be little doubt, and I consider that the circumstances described above point to its having been a Krait. Whether the patient, after having survived for so many hours before being submitted to the specific treatment, would have ultimately recovered or not without it is, however, more open to question. From knowledge derived from other sources but more especially from the results of experiments and observations as related to me by my friend Captain Lamb, I.M.S., of the Research Laboratory in Bombay, whose remarkable personal experience I hope soon to see in print,* I have myself implicit confidence in the efficacy of Calmette's antivenine even when the symptoms of poisoning have become well pronounced before its administration.

BONE AFFECTIONS IN YAWS

By C BARRY,

CAPTAIN, I.M.S.,

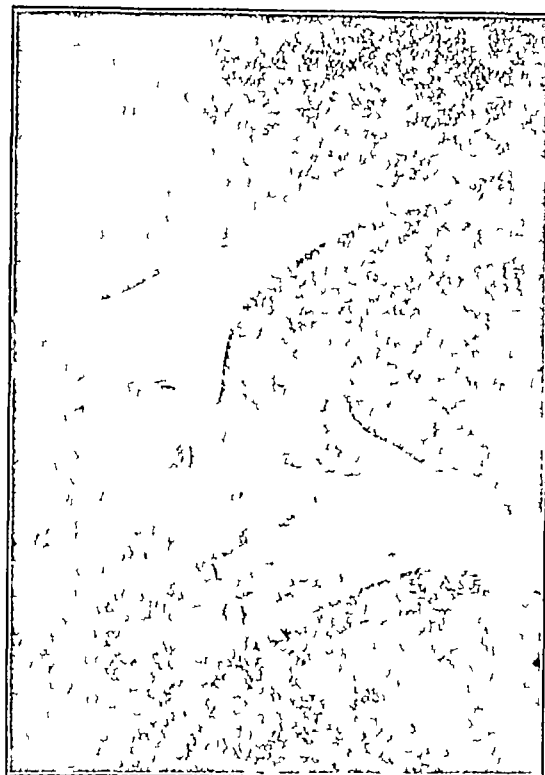
General Hospital, Rangoon

I HAVE had under my care for the last seven months a case of chronic enlargement of the bones of the hands, which appears in some respects to resemble that of two cases published by Dr Powell in the August number (1895) of the *Indian Medical Gazette*. I therefore enclose a photo of the case together with some notes.

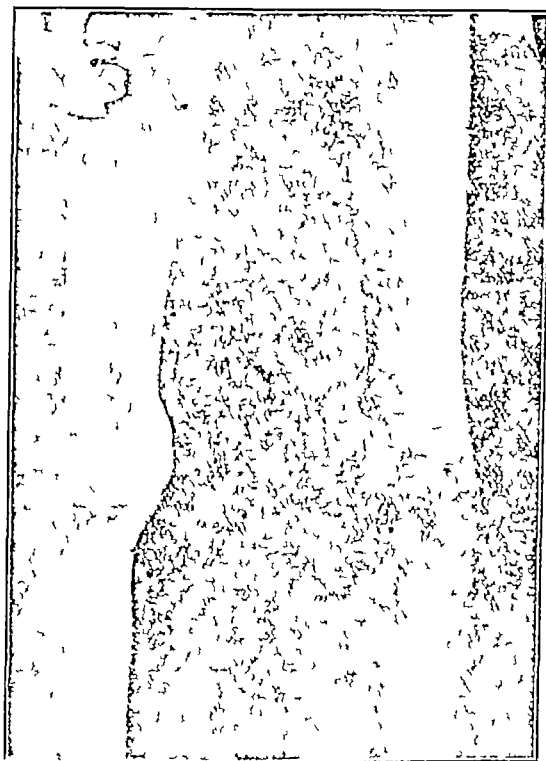
(Photo enclosed, showing condition of hands on admission, treatment has produced practically no effect.)

The patient is a young Shan, male, aged 20 years, of poor physique, his height is 4 ft., and

his weight 63½ lbs. His mother died when he was a baby, and his father when he (the patient) was eleven years old. He has one sister living,



Showing affection of hands, enlargement of bones is limited to neighbourhoods of joints



Showing symmetrical affection of both knees, the elbows, ankles and wrists were all affected in a like manner

* Vide *I M G*, December, p 494—ED, *I M G*

aged 22 years, who has always been fit and well, never had any other brothers or sisters, cause of death of parents unknown. Has, since he was an infant, been brought up as a priest in a "Hpyongee Choung," and in consequence has led a strict and celibate life.

He is well-educated for a Native and can talk Burmese, Hindustani, and his native language (Shan) and gives an intelligent account of his illness.

According to his own statement he enjoyed as good health as other children till he reached the age of ten.

He was then attacked with pain and swelling in the right knee-joint, followed in a few days' time by a similar affection of the left knee-joint, and then shortly after, by pain and swelling, in both the elbow and wrist joints, and in all the joints of both hands. He was treated by Native doctors with mercury. A large pill was given every day for seven days, salivation followed, and when this had quite gone, the process was repeated, after one year's treatment he got quite well. He remained well for eight months, and was then again attacked in a similar manner, and was again treated by Native doctors in a like manner and recovered in eight months' time.

This time he remained well for a year, when the third attack came on. The attack resembled previous ones, but this time he went to the civil hospital at Katha and was treated there as an in-and-out patient for one year with mercury. Slight salivation was produced and kept up, but after a year's treatment only partial improvement had taken place, and the joints though not painful remained swollen. He remained in this condition for three years, when the joints again became painful, and the ankle joints both became affected giving rise to pain and difficulty in walking. On this occasion he came down to Rangoon and was admitted for treatment in March this year.

On admission he was found to be suffering from symmetrical synovitis of both knee, ankle, elbow and wrist joints. The joints were distended but the bones in the neighbourhood of the joints were only slightly enlarged (see photo of knees enclosed). The metatarsal and phalangeal joints of both hands were, however, much swollen and deformed. The enlargement was limited to the heads of the bones in the neighbourhood of the joints, the shafts of the bones being normal in size and shape. The hands were to a large extent crippled, though he could manage to feed himself and perform all the necessary movements of every day life.

His general condition was very poor, and he was decidedly anæmic.

At first the patient was put on anti-rheumatic treatment, but after a month's trial as no improvement resulted he was put on mercury. The patient showed a most extraordinary resistance to mercury, and it was not till one ounce of the Liq Hydrarg Perchlor was given three times a day that his gums became affected. He has been kept well under the influence of mercury for five months, but only very slight improvement has resulted, for though the pain in the joints is less, and he is no longer anæmic, the condition of the joints remains

practically the same in spite of numerous Scott's dressings. He now insists on leaving for his home in Katha.

The etiology of the disease is, I think, somewhat obscure. He himself and a Native sayan (doctor) believed him to be suffering from a disease known as Kwe Na Bow, a variety of a well-known disease called Kwe Na, resembling closely or identical with yaws, and prevalent in certain parts of Upper Burma, especially in the neighbourhood of Katha. This disease has several forms as described by Dr Nolan (Transactions of the Indian Medical Congress 1894), and this patient's affection does in some respects the form described as Kwe Na Bow, but not closely.

The interesting point, however, appears to be whether the disease the patient is suffering from is due to syphilis or not.

The symmetrical nature of the affections of the joints, their chronic nature, and the fact that improvement did originally take place from the administration of mercury all point to a syphilitic origin, as also does the fact, that the patient never suffered from a skin eruption in any way resembling that of yaws. On the other hand, it seems improbable the patient can have suffered from acquired syphilis. He was first attacked at the age of 12 years, he has been brought up under a strict and celibate priesthood, and he denies having ever had connection with a woman at all. In addition he presents none of the ordinary signs of syphilis in shape of scars, enlarged glands, nodes, &c.

As far as congenital syphilis is concerned, the arguments against this origin are not so strong. He was attacked at an age when some of the later manifestations of secondary syphilis might be expected to appear, and his parents both appear to have died at a comparatively early age. But he himself shows none of the ordinary manifestations of this disease, his teeth, eyes, and nose are all well-formed and normal, and there are no scars about the corners of his mouth, nor does he suffer from any defects of the senses of sight, smell or of hearing.

Still in spite of the above points I am inclined to believe the affection the patient is suffering from is probably due to congenital syphilis, and if such is the case would appear to be of interest as throwing some light on the etiology of the disease Kwe Na which, as I mentioned above, strongly resembles the malady known as yaws.

Clinical Memoranda.

A CASE OF LUMBAR HERNIA IN A CHILD

By J. I. CALVERT, M.B. (LOND.), D.P.H. (CAMB.),
CAPTAIN, I.M.S.

WHILE inspecting a molussil dispensary in the Darbhanga district, a child was brought for treatment for an enlargement of the spleen.

Previous history—Misree, a Hindu female child, *æt* 2 years, had suffered three months previously from an attack of fever (?) which lasted ten days. On the cessation of the fever, a swelling made its appearance on the left side below the ribs, and gradually increased to its present size.

Present state—When the child cries, which it did vigorously throughout the examination, a tumour, the size of a cricket ball, makes its appearance immediately below the left costal margin, and extends as far forward as the outer border of the left rectus and backward to the iliac attachment of the latissimus and erector spinae muscle. An impulse can be felt on palpation and the tumour is resonant on percussion. By using force reduction into the abdominal cavity can be effected, but immediately the pressure is relaxed the tumour again makes its appearance—this was due to the crying. Owing to the child's struggle no satisfactory examination could be made without chloroform, which was accordingly administered.

Under chloroform the tumour immediately disappeared. At the site of the tumour a gap in the muscular parietes, equal in size to a rupee, could be felt immediately below the tip of the eleventh rib. Through this gap two fingers could be passed into the cavity of the abdomen.

Remarks—In appearance the swelling bore a striking resemblance to a splenic tumour. There was no history of injury. There had been no abscess in this situation, the spleen was normal in size and the child appeared otherwise healthy.

Treves, in his *System of Surgery*, states that "Macready has collected twenty-six examples of spontaneous lumbar hernia. Three of these recorded cases were in children, the remaining twenty three in adults." He further adds "this condition is more common in male than in females, and is nearly twice as common on the left side as on the right."

A STRANGE TUMOUR

By H SEN, M B,
Civil Medical Officer, Malda

SOHONI, a Hindu, Rajbansi female, aged about 40 years, was brought into the hospital on the 31st August, from a mofussil town about 30 miles off from head-quarters. She was in a moribund state, skin cold, pulse imperceptible at the wrists, breathing difficult, but quite conscious. On examination I found a sausage-like mass of flesh lying across the hypogastric region. It was about a foot in length, and of the thickness of the large intestine. It originated in the right iliac region where there was an opening through which it communicated with the abdominal cavity. At the first sight I took

it to be a coil of intestine. On further examination I found it was not so, it was a solid mass, very friable in texture and very vascular. The history was very interesting. About a year ago the woman had an accident. She fell down upon her face and got a cut in the right iliac region. It was a clean cut wound and was treated at home. The wound partially closed, it was a big one as the old cicatrix showed. Five days previous to admission the part became very painful and suddenly burst letting out the tumour. This brought on a state of collapse, the state in which she was admitted.

The general health of the patient was good, but life was fast ebbing away. A sniff of chloroform was given. The pedicle of the tumour was ligatured by a strong piece of silk, securing it as two halves and divided. Antiseptic dressings were put on. The temperature which had been subnormal at admission rose to 101°F on the third day. The old cicatrix suppurated. On free discharge setting in the temperature subsided. The wound thenceforth took a healthy action and went on gradually closing without showing any other untoward symptom. The woman left the hospital entirely cured and quite happy on the 21st of September. The question is, what was it? It was not a coil of the intestine nor a fold of the omentum. Was it a tumour growing in connection with the appendix vermiformis? or was it the appendix simply hypertrophied through inflammation? No microscopic examination could be done.

STRICTURE AT THE MEATUS—COMPLETE RETENTION OF URINE

By J P CALVERT, M B (LOND), D P H (CANTAB),
CAPTAIN, I M S

B J, *æt* 66 years, Brahmin, cultivator, was admitted into the Municipal Hospital, Durbunga, on 12th September 1900, suffering from retention of urine. There was a history of an attack of gonorrhoea 20 years previously. For three years micturition had become increasingly difficult and ten months previously there had been two partial attacks of retention. The present trouble began four days ago. The first two days urine could be passed in drops, for the last two days retention had been complete. Under chloroform, examination disclosed a tight stricture at the meatus extending thence backward for half an inch. After some manipulation a probe was passed through the stricture, and subsequently a director on which the stricture was divided. Afterwards a full sized metallic catheter was easily introduced into the bladder and 55 oz of slightly turbid urine withdrawn.

Remarks—The chief obstruction was at the meatus, as immediately the probe passed through that orifice urine began to dribble away.

THE
Indian Medical Gazette

JANUARY, 1901

MEDICAL PROGRESS IN INDIA DURING
THE PAST CENTURY

THE commencement of the twentieth century is a fitting time for endeavouring to recall, in a brief sketch, the medical and sanitary progress of India during the past hundred years. To do so even briefly may enable our readers to appreciate the difference between then and now.

THE INSANITATION OF OLD CALCUTTA

While the dawn of the twentieth century finds much, very much, still to be done in the way of sanitation and medical progress, yet the advance which has been made in sanitation at least is only to be understood by a knowledge of the indescribable filth conditions which existed a century ago.

The records are few and difficult of access, but in the pages of that delightful book, "*Echoes from Old Calcutta*," Dr H. Busteed, of the Indian Medical Service, has pictured for us the life of the European in those days in Calcutta.

In 1790-1800 complaints were frequent about the insanitary state of Calcutta, the tank in *Lal Dighee*, now Dalhousie Square, was the main source of the water-supply, and it received the drainage of a neighbouring Portuguese burying ground. No wonder, writes Dr Busteed, that the inhabitants on whom these unpleasant facts obtruded took every opportunity of converting the water into arrack punch before consumption, or that those who could afford to do so, gave it up altogether by the substitution of mulled claret or madeira, which drinks were much in fashion in those days. No wonder also that a most ordinary formula for accounting for the absence of such and such a one from society was that "he was down with a putrid fever or a flux." Little wonder too that as the close of each October brought round the end of the deadly autumn season, those Europeans, who were fortunate enough to find themselves above ground, met and thankfully celebrated their deliverance by the truly British device of large banquets.

But bad as was (and is) the climate of Calcutta, and terrible as was the insanitation of those days, yet much of what was put down to "unwholesome weather" was really due to the habits of our predecessors. "Drink deep in 105y port in September" was an advice often given and too faithfully followed in those days.

A century ago medical skill was not much thought of, and it was certainly unenlightened. Anyone who called himself a doctor was allowed to prey upon his fellowmen, and it is on record that a midshipman set up as a doctor, and "handled his patient's pulses as he would a rope."

ORGANIZATION OF THE MEDICAL SERVICE

Nevertheless it was before the end of the eighteenth century that, as will be seen in the admirable articles on the history of the Bengal Medical Service by Major D. G. Crawford, I.M.S., an attempt was made to organise the Medical Services of the country, viz., in 1788,* when Lord Cornwallis issued an important minute, ordaining that all medical gentlemen of the Company should be entered upon one general list, and have commissions granted to them agreeably to their proper rank as Army Surgeons. It also laid down that whenever employed in the civil line, they were to be considered as lent to that department and liable always to be recalled to their duty as military surgeons, a liability which the Government of India has availed itself of three times in the last six years of the century just closed.

FOUNDATION OF MEDICAL SCHOOLS

With the organisation of the medical department attempts were made to arrange for the medical education of the Native assistants, who before that time, picked up what knowledge, they could by attendance on the hospitals and the informal teaching of the civil surgeons. The first great step was the founding of a Vernacular Medical School in Calcutta in 1822, followed by the opening of the Calcutta Medical College in 1834, by that of Madras in 1835, and of Bombay in 1845. Since that date Vernacular or English Medical Schools have been established at Dacca, Patna, Cuttack, Poona, Ahmedabad, Agra and Dibrugarh.

* Before this another order of Home Department, dated 20th October 1763, was published. From this order dates the commencement of the Indian Medical Service.

We have not been able to find out the exact date on which hospitals and dispensaries were first opened to the general population of India, but the history of the English in India shows that from the earliest days of the East India Company, its medical officers were allowed to give medical aid to the people of India. It was in 1645 that Gabriel Boughton, Surgeon of the ship *Hopewell*, treated the Emperor Shah Jehan so successfully that as his reward he asked for additional privileges for the struggling Company, which had just opened factories at Balasore and Hooghly. And at a later period William Hamilton, as a reward for having treated the Emperor Feroshah successfully for hydrocele, received as a reward for the Company a grant of the 38 villages in and around where Calcutta now stands.

In 1786 a code was published laying down regulations for the duties of medical officers attached to the civil department, so that it is likely that a regular system of civil hospitals and dispensaries had grown up before that day.

LUNATIC ASYLUMS

As regards Lunatic Asylums, we find that in 1787 lunatics were looked after in the houses of surgeons, and we read of Assistant-Surgeon Dick receiving a grant of Rs 200 a month for certain female lunatics under his care. Asylums gradually grew up, but up to the middle of the century the treatment of the mentally affected was crude and rough in India as everywhere else. Major D M Mon, I.M.S., informs us that there still exist in the Calcutta Lunatic Asylum certain underground dungeons or holes, which up to the middle of the century were used for the confinement of the more violent insanes. It is not, however, till within recent years that we find proper arrangements for the due care of the insane and for the teaching and training of the asylum attendants. We have on previous occasions referred to the changes which are about to take place in the management of the asylums of India and with the new century we have every reason to expect that a new era is dawning for the insane in India.

VACCINATION

India was not long behind the rest of the world in following up the great work of Jenner in the introduction of vaccination. The first lymph to reach India was sent by De Canto, of Vienna, who had been one of the first physi-

cians in Europe to follow the teachings of Jenner. The first lymph, however, did not come direct from Jenner, but was equine lymph derived from a strain produced by Sacco of Milan. Of all the sanitary benefits conferred by the English on India, it is certain that nothing has been of greater benefit than the practice of vaccination. The dangerous practice of inoculation of small-pox has long been in vogue in India, it was probably introduced by the writings of the Arabian physicians, and a large percentage of the present adult population of India still bear the marks of inoculation, showing that it was very considerably in vogue as recently as twenty years ago. Inoculation has not yet been completely stamped out, but every year the reports of the Sanitary Commissioners bear testimony to the slow but sure spread of vaccination in India.

"THE BOUNDARY LINE BETWEEN THE PAST AND PRESENT"

Coming next to more recent times the marked feature of the medical history of the past quarter of a century has been the spread of sanitary science and of preventive medicine. Modern sanitary science in this country may be said to date from the publication in 1864 of the report of the Royal Commission. This date, as Surgeon-General Harvey has said, "may be taken as the boundary line between the past and the present of medical work in India."

Sanitary Commissioners were appointed for the Provinces, and the great struggle against disease was begun, an idea utterly foreign to the mind of the Native of India, who had been accustomed for centuries to look upon disease as a visitation of God, and as something that merely human efforts were powerless to combat. The fight has been an uphill one, and though progress can be recorded, the report of the recent Plague Commission has been a rude awakening for those who thought that the ingrained convictions and prejudices of centuries were to be removed either by the action of Government or by the spread of a merely literary education among the people.

Perhaps one of the most remarkable advances of the past dozen or so years has been the awakening of the Government of India itself. A dozen years ago it was dangerous for a medical man to preach the water origin or spread of cholera, and medical men have even been

muzzled who have dared to be in advance of their times. Relegation to "military duty" is no longer the penalty of unorthodoxy, on the other hand, Government resolutions discuss, with all the confidence of an imperfect acquaintance, the most abstruse points in bacteriology, or of the doctrine of immunity.

THE DISEASES OF INDIA

As regards diseases it is probable that they remain, in most cases much as they were in the commencement of the past century. In some cases, however, they have lost their greatest terrors. Small-pox at least has to a large extent disappeared under the influence of a wide extension of vaccination. Typhus fever, except in remote frontier villages, is almost unknown. Cholera, though it probably existed for hundreds of years in India, first was scientifically studied in 1817, and the last decade has seen the introduction of a method of anticholera inoculations which augurs well for the future. Plague has been known in India for centuries, and the past hundred years have seen several outbreaks, it still, however, remains, and the outbreak which started in 1896, introduced in all probability from China, has slowly spread over every province in India, and may be said to rage still with scarce diminished virulence.

A hundred years ago it is probable that dysentery was a much more formidable scourge than it is ordinarily nowadays. The "putrid fluxes" of 1800 were probably, to some extent, a measure of the depth of the insanitation which prevailed. Malarial fevers still very largely prevail, but we more rarely find nowadays cases of the severe types described by the earlier writers on the diseases of India. Nevertheless at times such outbreaks do occur, as during the past autumn in the Punjab and in certain parts of Central Bengal. So far, little or nothing has been done to mitigate this veritable plague, except by the extended sale of quinine. It is probable, however, that India will soon take its share in devising means for combating this evil. Modern ideas as to the spread of the malarial fever, in which Indian Medical Service officers have taken a honourable share, have taken root and will in time bear fruit, it is at least something for the modern school of malarialogists to boast of that the prevention of malaria is one of the most commonly discussed problems of preventive medicine at the present day. Whether time will

approve all or much of what is now somewhat confidently asserted time alone will tell.

Enteric fever is a disease which has assumed a vast importance of recent years in India as everywhere else. The confusion which long reigned over the nature of the continued fevers of India is far from yet being cleared up. The recognition of enteric fever, as the most formidable disease of the European in India, has not yet led to any considerable reduction in the waste of life caused by this disease, but an enormous amount of work has been done, and the recent introduction of the antityphoid inoculations probably opens up one great means for its future control. It is generally believed that this disease has for long prevailed in a mild form among the Natives of India, though often disguised under the name of "remittent fever" or other obscurant names. The known facts of its etiology suggest that it is extremely improbable that a disease known to be fostered by insanitation should not have existed amid the manifold insanitary surroundings of the Native of India. A few have suggested that typhoid fever is of recent introduction into India, among the most recent promulgators of this view we find Dr. W. J. Simpson, who, at an address at the last Sanitary Congress at Aberdeen, made such a statement, but owing to the imperfections of diagnosis in earlier times it is a point which must be left unsettled.

The still more recent discovery and recognition of Malta fever as one of the fevers of India shows that we still have much to learn, and is at the same time a great step forward in the differentiation of the fevers of India.

This naturally leads us to mention the most important step which has yet been made in medical progress in India,—this is the establishment of modern laboratories.

MODERN LABORATORIES IN INDIA

It was the ravages of enteric and cholera that led to the establishment of the Agra Laboratory, it was the spread of plague which led to the foundation of the Research Laboratory at Bombay, it was to some extent the desire to escape from the great expense of sending soldiers bitten by rabid dogs to Paris which led to the establishment of the latest laboratory in India—the Pasteur Institute at Kassauli. We are not, however, disposed to quarrel over the reasons which led to their establishment,

it is sufficient that we have got them, and we can only hope that when financial considerations permit we will be able to chronicle the establishment of many more. Not till then can we hope for the dawn of a new scientific era in medical progress in India.

We have thus lightly sketched the medical progress of the past century, and in closing this sketch it is only right to state that much of this progress is due to, and has been in the hands of that much threatened institution, the INDIAN MEDICAL SERVICE, which in spite of all assaults on its entity and well-being, is still, now more than ever, fulfilling its function as the great medium of medical progress in India.

MEDICAL PROGRESS IN BOMBAY

It is now more than fifty years ago since the foundation of the Grant Medical College in Bombay gave the first start to medical education in the Bombay Presidency. So successful has the scheme turned out that not only are the College buildings too small to accommodate the students, but they will have to be very largely added to in order to afford anything like the necessary space.

In the beginning there were a few only, five or six, who had to be attracted to the profession by the grant of a practically free education, now the amount of Rs 3,000 is paid annually in fees. Some of the very first students are still alive, and doing a large practice, some have also their sons to help them as partners, so that a second generation of medical practitioners is now actively engaged in the practice of the profession. It was once thought that the Natives of India would with difficulty be persuaded to dissect, or take up pathological work, not only, however, has this turned out erroneous, but some very good and careful dissectors have yearly completed their anatomical studies, and numbers of Parsees, Hindus, Christians, and even Mahomedans, have graduated successfully. In fact for the first time a real medical profession has been created, which occupies a good position in public estimation, the members of which make not only a livelihood, but in some instances have most lucrative practices. No doubt the same can be said for the legal profession, but legal work had never the drawbacks which were found to be inimical to the launching of the medical profession. A

middle class, comprising the professions and business men now exists in the large cities, perhaps for the first time in the social history of India, there having been practically hitherto only the two classes, the very rich and the very poor.

Although not quite complete in all its departments, the Grant Medical College and the J J Hospital teaching have been steadily progressing. The great difficulty, for instance, of dissecting in this climate has to a great extent been overcome by a more successful plan of injecting bodies, and the work has in consequence become more thorough and satisfactory. The Physiological and Chemical Departments have been extended, and a quantity of apparatus for experimental and other purposes has been gradually added, the use of the microscope in both the Physiological and Pathological Departments is thoroughly taught by the respective professors, and the recent discoveries of physical science can be demonstrated in the clinical laboratories. The work in the medical and surgical wards has undergone a similar change to that in Europe: stone for instance is seldom removed by cutting, but almost entirely by crushing, abdominal operations, and notably ovariectomies have much increased in number. So also in the case of cerebral surgery advances have been made under the protection of antiseptics and aseptic treatment. The operation and *post-mortem* theories have been much improved, and special attention is paid to the performance of minor operations by students. The teaching in the out-patient rooms is now much more systematic than in former days, and the attendance of students much more strictly insisted upon. The division into surgical and medical cases and the attendance of surgeons and physicians in each department as in European hospitals is now carried out. An ear and throat department has now been working for several years past. The instruction at the College and hospital has been thorough and practical as proved by the fact that some of our graduates have succeeded in obtaining the best British diplomas, and what is more a number of "plucked" students go yearly to England, and return with qualifications gained at the very first attempt.

The standard of the various medical examinations in Bombay is fair, and compares favourably with that of some examinations in Europe,

at the same time a steady student with a fair allowance of brains can certainly pass them, while it is scarcely likely that the unfit can do so, in fact, there is reason to be satisfied with the examinations as at present carried on

It is difficult to say what effect the steady increase of the medical practitioner has had on the *vaid*s and *hakims*. Some of them have found it worth their while to send their sons for a full medical education, and several have graduated, they appear to combine to some extent the practice of their forefathers with those of modern practitioners, and to some extent to suit their methods to the ideas of their patients. There is no doubt the members of the medical profession occupy a very different position to what they did some years ago, and behave in an independent spirit towards their patients, in fact, they are no longer patronised, but can boldly follow their own ideas as regards treatment. This is evidence of the immense advance made of late years, and may be compared with the position of the medical man in England some centuries ago and his present status. Here, however, the changes have taken place more rapidly, and we have every reason to be satisfied with the vast strides made, and the great benefit conferred on the public by an established medical profession

MEMOIRS OF EDWARD HARE, INSPECTOR-GENERAL OF HOSPITALS *

We have much pleasure in recommending to the attention of our readers this admirable little volume written by Major E C Hare, I.M.S., now Civil Surgeon of Gauhati, on the career in India of his father, the late Inspector-General of Hospitals, Edward Hare

Edward Hare went out to India to join his appointment as Assistant-Surgeon of the East Indian Company's Service in the year 1839, and retired with the rank of Inspector-General in the year 1866, having in the years of his service served in the Afghan War of 1842-3, the siege of Delhi in 1857, and the Second Burmese War of 1852

In his first year Hare was sent up to join the army in Afghanistan, and he found his way to Kabul after many adventures in the year 1840

The account given of this campaign is extremely interesting, especially that relating to the disaster in the pass of Jagdallak, when Dr Brydon, "the remnant of an army," found his way into the fort at Jellahabad, where Hare then was stationed

We do not propose to here sketch the whole career of Edward Hare, we advise our readers to get the little book and read it for themselves. After the Afghan War Hare was given an appointment as medical officer of a Cavalry Regiment stationed at the now abandoned station of Segouli, in the Champaran District, on the borders of Nepaul

It was here that Hare began those series of careful clinical experiments which should make his name remembered for long as one of the medical benefactors of India

It was owing to the work of Hare that the old depleting methods of treating the malarial fevers were finally got rid of, and the use of quinine substituted. The present generation has never known what the treatment of fevers by mercury is like. In 1816 Dr Halliday gave a terrible description of the evil effects of mercury in the Calcutta Hospital, and even openly accused his colleagues of murder, so that they were obliged to appeal to Government to have him (Halliday) turned out of Calcutta. These disastrous results at length produced a reaction in favour of bleeding, but it was found that the results of bleeding were no less disastrous than those of calomel

Hare has told the story of his first acquaintance with quinine, to the use of which he was led by reading the works of Lind and Hunter

Hare had a good field for commencing the trial of the then little known bark of cinchona. His patients came from the deadly Nepaul terai, and were consequently suffering from the worst forms of malaria. He graphically tells the story of the young European brought dying of fever to his doors, he was a soldier who had deserted from his regiment and had become lost in the terai, till found by some Natives. Under quinine he became cured, the fame of the new treatment soon spread through the feverish district, and Hare had soon accumulated sufficient evidence of the excellence of the quinine treatment to justify his publishing a pamphlet on the method

This pamphlet created a great impression, as Dr Ewart says, "it took the profession by surprise and created a great sensation throughout

* London, Grant Richards, 1900

the length and breadth of the Company's Indian possessions "

At last when other medical men had taken up the treatment and its efficacy was becoming clear, the Medical Board in Calcutta recommended the great pro-consul, Lord Dalhousie, to let Hare try the experiment in the General Hospital, Calcutta. The trial was to be for one year, and a ward was given over to Hare for the treatment of his cases.

The experiment commenced on 1st November 1849, it was soon shown that the quinine method was much superior to any other in vogue, at the end of the year Hare's results were a death-rate of only 68 per cent compared with a rate of 34 under the old methods. In the course of time Hare treated over 6,000 patients with a death-rate of only 47, or in his own words, "the mortality of the dreaded Bengal fever was reduced almost to nothing."

It is difficult for us, to whom quinine is an every-day remedy, to realise the importance of this great and beneficial discovery. No wonder Dr Ewart, the Professor of Anatomy in Calcutta, describes Hare's experimental trial at the Calcutta Hospital as having "given the final death-blow to the spoliative treatment."

With his usual foresight Lord Dalhousie, recognising that these results would lead to a great demand for the drug, set about introducing the cinchona tree to India. We refer our readers to the book for an account of the difficulties overcome before the cinchona tree took root in India.

The account given of the Burmese War and of the early days of the mutiny and the siege of Delhi are extremely interesting, but space forbids us to linger over them. Edward Hare retired with the rank of Inspector-General of Hospitals in 1866, and in the following year was appointed to be a Companion of the Star of India—a none too high honour for the man who established the use of quinine in India. We commend the book to our readers, it is admirably written, in the best of taste, and is elegantly got up and printed, with several interesting illustrations of scenes in Afghanistan in the forties.

LONDON LETTER

THE PLAGUE

THE Glasgow outbreak may now be considered ended, and very great credit is due to the sanitary authorities for the boldness, skill and success

with which they tackled what undoubtedly was a very serious and threatening situation. No new case has now occurred for several weeks, and the suspects have been liberated and most of the sick discharged. The principles upon which the emergency was handled are those which were fully recognised in India and as far as practicable acted upon, namely, early and complete detection, segregation of sick and suspect, evacuation and disinfection of premises and vigilant sanitation all round. It is as regards the first item in this programme that British health authorities hold so great and useful an advantage over Indian. They have to deal with an educated and sensible people amenable to reason and authority, and content to endure personal and domestic inconvenience for the public good.

The lesson of Glasgow ought to be loudly and persistently drummed into Indian ears. It is true that similar lessons might be learned nearer home of village communities, for example, saved from decimation by the simple expedient of camping out or "kraaling," but a comparison of Glasgow with Bombay yields a larger and more conspicuous illustration of the triumph of intelligent, and active sanitary effort on the one hand, and ignorant apathy, selfish concealment and unchecked disaster on the other. Other reminders are happening in various places that Europe is still in peril, although the diffusion of the Oporto and Glasgow outbreaks has been kept within moderate limits. Cases have recently been reported from London, Hamburg and Berlin, and the need of continued vigilance is very apparent if we are to escape a repetition of the gruesome experiences of the 16th and 17th centuries.

IMPERIAL MEDICINE

The extended prevalence of plague indicates the close community of interests which binds the various scattered members of the British Imperial body. This view was prominently advanced at the recent meeting of the British Medical Association at Ipswich in the Tropical Section, and in the latest number of the Polyclinic the Editor, Mr Johnathan Hutchinson, has taken up the parable and expounded it in his own lucid and impressive style. The study of medicine must no longer be insular or partial if it is to subserve the needs of the great organization of realms and peoples living under diverse tropical, climatic, social and domestic

conditions which constitutes the British Empire. It is the conviction of this necessity arising no doubt from more intimate association between the mother-country and her colonies and dependencies which has stimulated into activity and importance the agencies and efforts which of late years have been employed in the investigation of tropical diseases.

MEDITERRANEAN FEVER

No better example of the advantage of Imperial inquiry can be adduced than the history of this fever. It originally attracted attention as a local fever of doubtful nature affecting British troops in certain Mediterranean stations. It was called Rock Fever or Malta Fever as it occurred at Gibraltar or Malta. It was thought to be malarial typhoid or typho-malarial. The discovery of the micrococcus *melitensis* by Bruce established its specificity, and the further demonstration by Professor Wright of the agglutination test which had previously been established by Vidal in enteric fever, gave a precision to diagnosis which mere study and comparison of phenomena left in some obscurity and doubt. Cases observed at Netley admitted from India and China were found to present in their history, and serum reaction features corresponding to those of genuine Rock and Malta fevers. Tidings gradually came of fresh identifications from other localities situated in the Mediterranean basin and now it looks as the geography of the disease were about to undergo great extension. To this the paper contributed by Captain Lamb to a recent number of the *Indian Medical Gazette* has furnished an important addition, and has opened the door to similar investigations in other parts, tropical and sub-tropical, of the British Empire. By the employment of the clinical and bacteriological methods which he has used with such advantage, and they are fortunately both simple and easy, we ought to obtain within a few years a great deal of fresh information regarding the prevalence and incidence of this fever—data which will throw light upon the subjects of causation and prevention which constitute the final end and object of all such researches.

THE NUMBER OF MEDICAL STUDENTS

The statistics of entries at the various metropolitan and provincial medical schools of England indicate in the aggregate a considerable

falling off in the present as compared with previous sessions. This, in conjunction with the facts of increasing demand for the public services and decreasing supply, constitutes a somewhat startling discovery. Is the profession of medicine losing its attractions? or, are other professions more attractive in comparison? or, are the labour and cost of studying medicine now becoming so great that they are getting prohibitive? or, is the decrease of students merely a consequence of disturbed conditions due to the war? These are serious questions which it is not easy to answer. The abolition of the unqualified assistant, colonial expansion and increase of the Army and Navy ought to determine an increased number of medical students and men, and if the decline is real and progressive something must be done to increase the attractions of the profession. This appears to be more incumbent in the case of the army than elsewhere. The examination for the R A M C has ceased to be competitive, and even the expedient of nomination without examination threatens to fail. The time has come when a serious situation must be looked at fairly in the face, and the question has fairly arisen whether the conditions of the service as regards pay, pension, foreign service and leave, ought not to be carefully considered with a view to being revised and recast.

K McL

9th November, 1900

Current Topics.

THE INDIAN MEDICAL GAZETTE

WITH the commencement of the new century the *Indian Medical Gazette* enters upon the thirty-sixth year of its existence, and it is consequently far and away the oldest medical journal in India or the Colonies. The previous history of the *Gazette* was sketched in these columns in 1897 (October, p 381), and hence it is here only necessary to trace very briefly the main facts of its existence.

The *Indian Medical Gazette* owes its existence to the energy of the late Deputy Surgeon-General David Boyes Smith, who, after a long career in India, was, on retirement, appointed Professor of Military Medicine at Netley, the post now held by Professor Kenneth McLeod, who for no less than 22 years was Editor or Joint Editor of the *Gazette*. The

following is a list of the Editors up to the present time —

David Boyes Smith, 1868
 John Purefoy Collis, 1867
 Charles R. Francis, 1868
 James Tyrell Ross Carter, 1869 70
 Charles N. Macnamara, 1871 73
 Kenneth McLeod, 1871 to 1892
 John Gay French, 1875 76
 L. A. Waddell, 1884 85 and 1897 99
 W. J. Simpson, 1889 1897
 Alexander Crombie, 1892 93
 D. M. Moir, 1897
 F. P. Maynard, 1898
 C. Bedford, 1898
 W. J. Buchanan, 1899

The present publishers have had it in their hands since 1885

In 1897 when Major D. M. Moir took it over from Dr. W. J. Simpson several important and useful changes took place in the *Gazette*. The most important of these changes was the appointment of Lieutenant-Colonel Maitland, I.M.S., and of Lieutenant-Colonel W. K. Hatch, I.M.S., as Associate Editors for Madras and Bombay respectively. This was done with the designed intention of making the *Gazette* more thoroughly representative of the medical profession in all parts of India. The result has been all that was expected, and to-day we are in receipt of communications from all parts of India and Burma. This further extension of its usefulness has been a main object of the present Editor, and we are glad to be able to state that we reckon our contributors from every Province of India. This is clear from the following table which gives the list of our contributors in the year 1900 —

Bengal	21	Punjab	7	N. W. P. & O.	14
Madras	9	Bombay	8	Central Provinces	5
Burma	4	Rajputana	2	Kashmir	3
Assam	1	Officers in Military employ			20

We are very glad to point to the number of contributors in Military employ, and we have endeavoured to make the *Gazette* as attractive as possible to them, and we hope that this year we may have even more. While the *Gazette* is naturally chiefly supported by men in the Indian Medical Service, we have not been without articles from men in the R.A.M.C. and from non-service medical men, and we would welcome many more such.

During the past year the articles of perhaps greatest interest have been as follows, to mention only a few,—those on malaria by Ross, Rogers, and Feanside, on enteric fever by Andrew Buchanan, on the use of cinchonidine by Maynard, the articles on snake-bite in our April number, the articles on Filariasis by James (which were recognised at the meeting of the British Medical Association as the most valuable contribution to tropical pathology of the year).

Other articles worthy of mention are those by Lawrie on chloroform, by Henvey on cerebro-spinal fever, by Barry and Rost on beri-beri, and the special articles on ankylostomiasis. The

article by Lamb on Malta fever marks one step forward in the study of the fevers of India.

In surgery we have had a long list of excellent papers, especially on abdominal surgery by Sturmer, Sunder, Green, and Davidson, on renal surgery by Hatch, Duke, and the brothers Neve, on eye surgery the able article on the extraction of cataract in its capsule by Henry Smith, and the list of valuable monographs on stone operations by the contributors to our special number.

For the year that is now commencing we hope to be able to cater in an equally satisfactory manner.

The success of our special number on Stone has been marked, it has attracted the attention of the medical press all over England and America. This has led to requests for other special numbers, suggestions have been made for an "abdominal number," a "dysentery number," and we announce in another column the issue early this year of a special "ophthalmic number."

A minor alteration is seen in this issue, viz., a new heading for clinical notes or memoranda, it is hoped that use will be made of this column for the notice of many minor points or cases which now go unrecorded.

The Service Notes are a feature of the *Gazette* which we find is much appreciated by our readers, we wish to extend these columns, but to do so we must ask our readers in all parts of India to send us local notes of interest to men in the services.

We may add that we are always grateful for hints and suggestions from our readers, and our correspondence columns are always open for the free discussion of disputed points in medicine or surgery.

OUR FORTHCOMING SPECIAL OPHTHALMIC NUMBER

THE success of our special Stone Number published in August last has led to the request on many sides for the production of a special "cataract" number, an operation in which surgeons in India may fairly claim a very special experience.

In due course a circular will be sent to a large number of Civil Surgeons who will be asked to fill in the questions therein asked, the information thus collected will be tabulated and duly acknowledged.

The following is a sketch of the information needed, and on which the experience and opinions of medical men in India are invited.

(Those who are willing to write articles on any subject connected with cataract or other disease of the eye are requested to communicate with the Editor as soon as possible.)

Total number of operations performed within the past five or ten years in each hospital, with percentages of success, specifying where possible

the form of cataract, senile, congenital, traumatic or secondary

With regard to senile cataract information will be asked for as regards ages, average and extremes, sex, caste, staple diet, association with disease, *e.g.*, diabetes, albuminuria, rickets, &c. With regard to the operations usually performed, details will be requested as to the kind of operation, with or without iridectomy, extraction in the capsule, &c. The experience of operators is desired on such questions as operations on unripe cataracts, on maturation operations, the question of corneal astigmatism in relation to particular methods of operation, the means employed for preparation of the patient, and for asepsis or antiseptis, the proportion of cases in which a secondary operation proved necessary, the anæsthetic used, cocaine, strength, β eucain, preparation of, chloroform, &c. Methods of dressing and protecting eyes (both eyes bandaged, one or none), how long should the bandage be kept on, how long should the patient remain in hospital. The question of complications existing before operation and arising during treatment should be dealt with, and the more usual complications and the best means of preventing and treating such are also important subjects, on some of which the text-books do not give much help. The use of atropin and eserine before or after the operation is a debated question, and will, we hope, be fully discussed.

The method in use by each surgeon for testing his results, especially in the case of illiterate patients, the provision of spectacles to patients. The percentage number of bad results, due to hæmorrhage, suppuration, iridocyclitis or in other ways, on all these points information is desired.

While cataract is perhaps the most interesting disease of the eyes, yet it is proposed not to limit the scope of the special number to it alone, the question of trachoma is one which has been frequently discussed of recent years, especially its relative prevalence among the different races in the tropics. Hence information is desirable as to the percentage of cases of trachoma to all other eye diseases, its relative prevalence among certain castes, or in the neighbouring jail, the usual treatment and results. It is hoped also that some of our readers may be able to supply information as to the prevalence of errors of refraction among natives of India, or if there is any special prevalence among those attending schools. Other subjects of interest are interstitial keratitis, syphilitic disease of the eye, ulcerations of the cornea, glaucoma, congenital defects of the eye, &c., &c.

It will be seen that the programme is a wide one, and we hope that many of our readers will take up one or more of the subjects suggested. The success of the special number will depend upon our readers, and we ask all those who are

willing to write for it to communicate as soon as possible with the Editor.

MOSQUITOES AND YELLOW FEVER

THE *Philadelphia Medical Journal* (October 27th, 1900) published an important communication on the subject of the spread of yellow fever by means of mosquitoes. It is a preliminary note by Major Walter Reed, M.D. of the U.S. Army and three of his colleagues. These officers were sent to Cuba with instructions to give special attention to the etiology of yellow fever.

The first part of the report deals with the bacteriology of yellow fever. The result of their inquiries is to show that Sanarelli's bacillus was on no occasion found in the blood of eighteen cases examined, and the reporters decide that the "bacillus icteroides stands in no causative relation to yellow fever," thus supporting the opinion always expressed by Surgeon-General Steinberg.

The most interesting part of the report, however, is that, relating to the part played by the mosquito.

It has long been known that a Spanish doctor, Carlos Finlay, many years ago started the hypothesis that the disease was conveyed by mosquitoes, but though this statement has been repeated for years in every article on the subject, it is not known so well that Dr. Finlay worked out the theory in some detail and stated that it was possible by means of the mosquito to inoculate mild forms of the disease which were protective against the disease in the future. His original paper is to be found in the *Anales de la Real Academia* (Vol. XVIII, 147).*

The present report gives details of eleven experiments made on eleven non-immune individuals, the mosquito used in all cases was the *Culex fuscatus*, the habitat of which is noted by Giles to be Porto Rico.

Of the nine cases experimented on with negative results, it appears as if this result may have been due to the mosquitoes having been used for biting the subjects either too early in the case, or to their having bitten only very mild cases of the disease.

The following is a condensed account of the two positive cases —

1. Dr. James Carroll, of the U.S. Army, a Member of the Board making the inquiry, was bitten on August 27th by a mosquito, which had bitten a severe case of the disease twelve days before, as well three other cases at intervals of six, four, and two days before. Dr. Carroll remained well for two days, and on the fourth day became distinctly unwell with fever, headache, &c. The symptoms were unmistakable on the next day, and a careful blood examination showed that malarial fever could be excluded. On the same day expert opinion pronounced the case to be certainly yellow fever. The history of Dr. Carroll for some days before is given, and it appears that the only possible chance of his having acquired the disease otherwise, was in the fact that

* See also, 8th Internat. Congress of Hygiene, Budapest, 1894.

three days before he was bitten by the mosquito he had been present at a *post mortem* on a case of malarial fever, which was carried out in a room, in which the day before a *post mortem* examination had been performed on a yellow fever case by one of his colleagues. Dr Carroll did not, however, touch the *post mortem* table.

2 The second positive case was in an American, a man who lived outside of the epidemic zone, he was bitten by the same mosquito which had bitten Dr Carroll four days before, and meantime had bitten a mild case two days before being applied to the second case. The latter was also bitten by several other mosquitoes which had bitten other cases of the disease recently. On the fifth day after inoculation the patient began to feel symptoms of the disease, and a typical severe attack ensued with jaundice and albuminuria, and the blood failed to show any malarial parasites.

The third case is a sad one. It is not included in the experiments because the inoculation was accidental, but nevertheless Dr Jesse W Lazear died of the disease, another medical martyr.

On the 16th August Dr Lazear was bitten by a mosquito which had been contaminated by biting a mild case on the fifth day of fever, but no ill result followed this bite. On the 13th September, however, Dr Lazear was taking some yellow fever blood for examination, and a mosquito settled on his hand, and he allowed it to bite him. Five days after the bite he felt out of sorts, yellow fever soon developed, and the unfortunate experimenter died of the disease.

The Report concludes as follows —“For ourselves we have been profoundly impressed with the mode of infection and with the results that followed the mosquito bite in the three cases.

a typical attack has followed the bite of an infected mosquito, within the usual incubation period of the disease, and in which other sources of infection can be excluded.” It is therefore concluded that “the mosquito serves as the intermediate host of the parasite of yellow fever, and it is highly probable that the disease is only propagated through the bite of this insect.”

It is obvious, however, that the experiments were not conducted with all the rigidity necessary in an experiment of this kind, it is open to the sceptical to say that the disease may have been acquired in the ordinary way (whatever that way may be). It is at least certain that such a possibility cannot be effectually excluded.

Another weak point is that the germ of the disease has not certainly been discovered, nor has its evolution in the tissues of the mosquito been traced. It is clear that though the experiment is of extreme interest and importance, it has not been performed with the accuracy and detail used in the analogous experiments on malaria.

No doubt this will soon be done, and we may expect that the Yellow Fever Expedition of the Liverpool School of Tropical Medicine will not be long in repeating the experiments under more rigid conditions. Meantime the results of these experiments will lead to a further desire to control the wanderings of this pernicious insect, and the war against mosquitoes may be expected to wage fiercer than ever.

CEREBRO SPINAL FEVER

THE interesting and valuable report on cerebro-spinal fever in India which we publish in this issue may be taken as setting at rest any doubts which may ever have existed as to the identity of the disease as known in India with the disease which is becoming increasingly well known in Europe, America and other parts of the world.

The *Diplococcus intracellularis* was discovered by Major Drury, I.M.S., Professor of Pathology, Calcutta, in a case submitted to him by the present writer from among a series in the Bhagalpur Central Jail, and now we have the report on Major E. H. Brown's cases, in which Captain L. Rogers, I.M.S., Acting Professor of Pathology, Calcutta, discovered the same organism in five cases examined. This shows the identity of the disease with epidemic cerebro-spinal fever in Europe. It is a curious fact, illustrating the inattention paid to the diseases of India up till a few years ago, that Dr Omerod (*Allbutt's System I*, p 672) quotes Hirsch as giving the southern limit of the disease as 30° N Lat. Such a line would almost exclude the whole of India. It is not improbable that, as Netter has said, there is a recrudescence of this disease all over the world. It has however, been well recognised in India for fifteen or twenty years. One of the most important documents on the early history of the disease in India is the Report of the Jail Committee of 1885, which was appointed to study the cases which in that year were met with in the Alipuri Central Jail, and in the emigration depôts, where Major Brown's cases described in this issue were also found. We understand that such cases have, more or less, never been absent for years from these depôts and from emigrant ships trading to the West Indies. We called attention to this fact in a sketch of the history of the disease in a paper read at the British Medical Association in 1898,* but to judge by a recent report to the Governor of British Guiana, it appears as if the disease has only been recently recognised in our West Indian Colonies. More recently we have referred to the epidemic at Khartoum (*Indian Medical Gazette* of 1900, p 363), and a severe epidemic has been reported among carriers imported from West Africa to take part in the recent Ashanti Expedition. One or two cases have also been reported of the disease in the army in South Africa.

One remark by Captain Rogers is of interest with reference to a recent experience in Bhagalpur Central Jail. Captain Rogers notes that it is probable that the germ flourishes in the superficial layers of the soil. In a report submitted to Government by Captain C. R. Stevens, I.M.S., and the present writer, it is pointed out that there is an apparently strong connection between

* *British Medical Journal*, 24th September, 1898, and *Journal of Tropical Medicine*, Vol I, No 1, 1898.

this disease and exposure to dust. The report will be published in these columns, but we may mention that out of 50 cases met with in that Jail in the past four years no less than 47 of them were exposed to dust, either in grain grinding sheds or on work in the garden, most cases occurring in the dusty month of April.

THE COCAINE HABIT AMONG NATIVES OF BENGAL

We have more than once commented upon the fact that the Natives of some parts of Bengal have taken to the use of cocaine as a euphonic drug. In Bhagalpur town the vice has become well-known, and efforts have been made to restrict the sale of the drug for other than strictly medical purposes. We recently had the opportunity of discussing the matter with a man convicted of selling cocaine without a license. He stated that it is secretly sold to a considerable extent to school-boys, students, merchants and men of all classes of the community. His employer used to send him out with small packets made up for sale at half an anna each. Taking the price of cocaine at about Rs 3 per drachm, or say 1 anna per grain, it would be possible to sell with profit about half a grain in each packet. Our informant stated that he would sell on the average 30 or 40 packets in the day. Some of the purchasers ate it alone, in other cases it was mixed with their *pan*.

It is probable that at first the drug is found useful to allay pain or cough, but the habit must grow on the consumer and reduce him to bondage.

We have only met with one person who took cocaine to excess. This was a cooly recruit who stated that one $\frac{1}{2}$ oz. bottle only lasted him a week. It is probable that he was exaggerating, for when committed to jail (for some offence), his supply was at once stopped, and except for a very temporary depression he seemed little the worse. At any rate Clifford Allbutt states that the effects are worse even than those of morphinism. He describes (*System*, Vol II, p 907) the symptoms as at first consisting of a sense of well being, and removal of fatigue, "perennial joy and vivacity seem promised," but the effect is very fleeting, and is followed by much depression. If the habit be continued, symptoms of chronic intoxication come on, sleepless nights, tremors in the limbs, loss of appetite, the body emaciates, the will becomes weakened to the point of imbecility, sensations of creeping things are felt under the skin, sand pebbles, worms, &c. (this symptom is said to be diagnostic), the abasement is profound, the mind gives way, and delusions of persecution are prominent in the wreck of intelligence. Such a train of events shows that it is a most pernicious substitute for morphine, for which it has been sometimes recommended.

We recently referred to the fact that cocaine "sniffing" had become common among Negroes in the Southern United States. The use of the

leaves of the coca plant (*Erythroxylon Coca*) by the inhabitants of Peru goes back beyond historic times, and of recent years its use has been suggested, but found wanting to overcome the effects of fatigue. The experience of Alpine climbers is, moreover, against its use.

It would be a strange, if not unlooked for, result of the efforts of the anti-opium party if, in case they succeeded in prohibiting opium, they were to lead to the substitution of a much more deadly drug.

We shall be glad if Civil Surgeons in other parts of India can inform us if the cocaine habit prevails to any extent in their districts.

NIGHT BLINDNESS

We have received many letters from medical officers in different parts of India bearing testimony to the efficacy of liver or of cod liver oil in the treatment of this affection. A continued experience of the disease leads us to recommend cod-liver oil, probably the ideal form of treatment would be the administration of one of the numerous preparations of the oil as Kepler's Solution, Scott's Emulsion or the Maltine and oil preparations.

As regards the disease itself not much has been written about it. It is in connection with scurvy that allusion to the complaint has usually been noted, but it is by no means necessary that the patient be in a cachectic state to produce these symptoms. Nyctopia has been noted in cases of "liver disease with or without jaundice" (Quain), anæmia, pregnancy and chronic alcoholism, its connection with liver disease might explain the efficacy of liver treatment.

It is probable, however, that these defects of nutrition, &c, are no more than contributing causes, the real cause being the glare of the sun. Mr Johnston Smith of the Seaman's Hospital (Allbutt, Vol V, p 597), states that night-blindness is most frequently met with among the crews of war ships cruising in tropical waters (i.e., exposed to glare). Mr Donald Gunn says that night-blindness has no more to do with scurvy than with any other exhausting disease, except that instances of the affection were first observed in scurvy patients. "Night-blindness is a functional disorder depending primarily on exhaustion of the retina from prolonged exposure to bright light. Any cause that lowers the general vitality will tend to accelerate the incapacity of the retina to respond to less than the strongest stimuli." He also points out that "perfectly vigorous well-fed men, if exposed to sufficient glare, become night-blind, as in the snow-blindness of Alpine climbers," also scurvy patients are not night-blind unless they have been exposed to very bright light.

These facts together with its known occurrence in men working in the glare of iron-foundries

make it clear that its long supposed connection with scurvy is only accidental, in that scurvy is most common in the tropics or among sailors who are exposed both to the glare of the sun and of the sea

The association of conjunctival xerosis with night-blindness is not yet understood, but it is at least worth noting that the Natives of Bengal believe firmly that the affection can be cured by smearing liver fat on or even around the conjunctivæ. We tried this in one case, and the man certainly recovered his night sight in a few days, and we were then driven either to accept this method of treatment or to suspect that the patient had obtained surreptitiously some of the liver which was being used in the cases of other patients

If then night-blindness is a form of "glare retinalgia" [which has been described by Captain R. H. Elliot, I.M.S., in our columns (*I M G* of 1898, p. 168)], we would expect to find it most common in the hot and sunny months of April, May and June, but it seems to make its appearance later than this date, and in our experience rather in August, September and October, this may be, however, due to the fact that men's health is often below par in the rainy season

We have received several Annual Reports of Bombay Hospitals, notices of which, we regret, have been crowded out of this issue

The position taken by Captain Leonard Rogers, I.M.S., M.D., with regard to the mosquito theory of malaria appears to be almost identical with that of Grawitz (*Berlin Klin. Wochenschrift*, June 11th, 1900) who, while admitting that the mosquito may be the chief agent in the transmission of malaria, does not think that it will explain the whole epidemiology of the disease. He shows by charts that in the Prussian Army the incidence of the disease rises from March, and reaches its height in June, when he says, mosquitoes are very rare. Moreover, he points out that there has been a marked reduction in the amount of the malarial fevers within the past few years in the Prussian Army, apparently coincident with the regulation of the drinking water, which he apparently thinks may convey the disease

We ask medical men who have had experience of cases of snake-bite treated by antivenine to follow the example of Colonel Scott Reid, I.M.S., and send us the cases. Up to date only a few have been published in India, but we want many more cases reported before the new treatment can be definitely said to be a success. Cases in which the snake has been caught and identified are of especial value in this connection

THE reports of Professor Fraser's lecture on the work of the Plague Commission in India are rather scanty, but while we admit the "need for sweeping sanitary reform," it is rather unpleasant to be told that plague will not be eradicated till the houses of the Natives of India "approach to some extent the character of the bungalow of the European in India." Overcrowding and poverty are not confined to India, and while we agree that fresh air and ventilation are extremely important measures in fighting plague, we feel that it will be a long time before any, well-ventilated bungalows will be the rule in the crowded cities of India

We have all of us often prescribed "Dover's powders," but probably few are aware that Dr. Thomas Dover was a bold buccaneer and sailor. He was born in 1660 in Warwickshire, and for a time practised in Bristol. Having made some money he started on a privateering expedition to the Spanish main, and on his voyage in 1709 he discovered Alexander Selkirk, the original of Robinson Crusoe, on the island of Juan Fernandez

MR Cantlie's little book on Plague, price 1s 6d, is announced as ready, Messrs Cassell & Co are the publishers

AN interesting article on the treatment of liver abscess by Dr. Neil Macleod, of Shanghai, appears in the November number of *Journal of Tropical Medicine*

WE shall be obliged if surgeons in other parts of India can give us their experiences of renal calculi, as Lieutenant-Colonel W. H. Henderson, I.M.S., has done in this issue

IN a discussion on cataract operations at the recent meeting of the American Medical Association, it is mentioned that the average ophthalmic surgeon in America does on the average fifteen to twenty cataracts in a year. We know of hospitals in the Punjab where more than that number are done in a week

IN the new Tropical Journal published in Spanish at Havana Dr. J. Guiteras, the well-known American Yellow Fever "Expert," states that—"The larvæ of the anopheles were found abundant near Havana and Matanzas, but few specimens of the culex could be obtained. Mosquitoes grown from the larvæ proved to belong to the variety described by Grassi as the *A. superpictus* or the closely-allied *A. pseudopictus* or *costalis*. They all rest in the characteristic attitude mentioned by Ross, the proboscis and abdomen forming a straight line, always at an

angle of about forty-five degrees with the surface on which the insect is standing"

TWENTY-THREE men and women of Chicago evidently do not believe in the adage that "civilised man cannot live without cooks," hence they have formed what is called a "raw meat society" and are preaching their propaganda. If they must be primitive, why not go without clothes?

THE unsatisfactory results which have followed the antitoxin treatment of tetanus have led Krokiewicz to try the effect of brain emulsions. An emulsion is made of a rabbit's brain, and injected subcutaneously in considerable quantities. So far, eight recoveries and two deaths have been reported—(*Wein Klin. Wochen*, Aug 2nd)

ANOTHER case (the fifth within a year) of indigenous Malta fever has been discovered in Simla, the patient being under the care of Lieutenant-Colonel Lukis, I.M.S., the Civil Surgeon. The serum reaction was obtained in this, as in the former cases, by Major E. Roberts, I.M.S., and confirmed at the Research Laboratory, Bombay. We shall be obliged if medical officers who find such cases will report them in these columns. It is of importance to know to what extent Malta fever may be considered to be one of the continuous fevers of India. Have any such cases been found in Madras, Bengal or Burma?

We specially invite the attention of all Administrative Medical Officers in the stone districts of India to the article in this issue by Dr Keegan. What is wanted is a more detailed and accurate registration of stone cases, giving details as to age, weight, &c. Such a table would give little trouble to compile, and such would become in time of great value in estimating the relative merits of the different operations. The Director-General, I.M.S., recognising the importance of the question, has issued a circular asking operating surgeons to publish such details of all large stone operations. It is only by thus accumulating a mass of statistics that surgical opinion at home will be influenced, it has followed the lead of Indian surgeons as regards litholapaxy, we may also be able to lead it in regard to the treatment of large stones also.

We have received, and will notice in our next issue, the Annual Report on the Government General Hospital, Madras, it is full of matters of surgical and medical interest. We may note that appendicitis has been several times operated on in this hospital, and at least five operations for this disease have been done this year. We

will refer to these and other matters in our next number

We have received a copy of *Archives Orientales de Médecine et de Chirurgie*, which is a recent publication, devoted to medical matters in the East, not, however, the further East, but rather Turkey, Asia Minor, Egypt, &c. It is in French, which is the "traditional language in these countries," as the preface says. The Editor is Dr Marcel Manheimer, 34, Rue de Mauberge, Paris.

We hope to publish in next issue a resumé of the replies we have received to our inquiries about the prevalence of mosquitoes, during the year, in various parts of India.

THE *Philadelphia Medical Journal* of 24th November has a very appreciative article on the present status of litholapaxy as shown by the results published in our Stone number.

Reviews

Nursing and Hygiene—By R. LAWTON ROBERTS, M.D. H. K. LEWIS, London, 1900.

THOUGH this little book consists of a series of lectures for those qualifying for nurses, it will be a valuable addition to the home library for family use, as the author himself says, in the majority of cases of sickness in a home, the nursing falls to the lot of mother, wife, sister or daughter. To them—fearful and uncertain of what is best to be done—this little book with its plain, practical teaching, will be of great value.

To the inexperienced wife and mother, as well as the nurse, the chapter on food and drink will be of special interest. The subject is not only treated of from a scientific standpoint but many recipes are given, and much useful information on the details of preparing many articles of food and drink suitable for the invalid. This chapter, with Table A, showing the peculiarities of and the differences between the more common specific contagious fevers, and Table B showing the periods of isolation necessary after exposure to infection from them, particularly recommend the book for family use and reference. To these may well be added the articles on disinfection in the Appendix and Lecture V.

Dr Lawton Roberts devotes one lecture to the ventilation, warming and lighting of the sick-room. He strikes no uncertain sound on the subject of ventilation. After pointing out the necessity for ventilation, he shows how it may be obtained in hospitals and private sick-rooms. As the author says, it is not only in

the homes of the working classes but of the well-to-do that windows will not "open at the top," and the nurse who can impress upon the inmates of the homes she visits the truths contained in this chapter will confer a lasting blessing.

One lecture treats of the choice and arrangement of the contents of the sick-room such as furniture, beds, bedding, the making of beds, changing of linen, preparing and cleansing the sick-room, moving the sick and the admission of visitors. Its advice is excellent.

In the lecture on contagious and infectious fevers, Dr Roberts deals with the nature and modes of contagion, characters and length of contagion in common fevers, prevention of fevers by sanitary measures, and prevention of spread of contagion by quarantine, disinfectants, and other precautionary measures.

One lecture treats of observation of the sick, and two are devoted to the details of nursing. Baths, poultices, fomentations, blisters are treated of at length, and instruction is given in bandaging, cupping, syringing, the administration of medicine, and the use of various instruments as far as they come within the sphere of nursing.

Filters, Consumption and disinfection are treated of in the appendix. Dr Roberts considers that from 10 to 20 of every 100 cows suffer from tuberculous disease, and urges the necessity for boiling or sterilizing milk since it is not only the carrier of tubercle bacilli but also of the germs of cholera, typhoid, scarlet fever and diphtheria.

The text of the book has been made clearer still by numerous illustrations. It is a practical useful little book and contains information of great value to the nursing world, to whom we strongly recommend it.

Contributions from the William Pepper Laboratory of Clinical Medicine—University of Pennsylvania Philadelphia, 1900

PUBLISHED *In Memoriam* of the late William Pepper this handsome volume contains a grand record of research work by nine separate writers as well as a list of previous contributions from the laboratory. Among the latter were four valuable papers by William Pepper himself. The range of subjects is very wide, and includes a warning to any who may be tempted to give way to the vice of excessive water-drinking—*The influence of immoderate water-drinking upon Metabolism and Absorption* by D. L. Edsall, M.D. We often hear Americans accused of drinking iced water to excess, and this practice no doubt accounts for a certain amount of dyspepsia. One point is, however, clear, namely, that it is inadvisable to drink much at meal times. The other papers contained in this work are—*Two cases of Muscular Dystrophy*, *A case of Amyotrophic Lateral Sclerosis*, both papers by Dr. William G. Speller. Dr. Joseph Sailor contributes three articles—(1) *A fatal*

case of Sulphonal Poisoning, (2) *Melanotic Sarcoma of the Spinal Cord*, and (3) *Primary Endothelioma of the left Superior Pulmonary Vein*.

The earliest symptoms of sulphonal poisoning appear as a weakness of the lower limbs passing on to complete paraplegia. This condition may be reached without fatal results, but the drug should be stopped before this stage is arrived at. Other symptoms are—"Various cutaneous eruptions, gastro-intestinal disturbances and extreme constipation, cardiac and respiratory weakness with a peculiar dyspnoea." The third paper is of special interest since primary tumours of the veins are rare. The tumour was discovered at the *post-mortem* examination. The woman was sixty years of age, and showed signs of general atheroma. There was no history of injury, but most of her organs were more or less diseased, and she appears to have died from a combination of pleural effusion and hepatic cirrhosis. Dr. Joseph Walsh contributes an interesting paper on *Pertussis*, one of the gravest troubles of childhood. Unfortunately, he still leaves it an open question as to the rôle played by the Czapiewski-Hensel bacillus and as to the value of serum treatment. If any one of the articles contained in this volume can be regarded as superfluous, it is Dr. Frazier's *An Experimental Study of the Etiology of Appendicitis*. Nothing is placed before us that cannot be gathered from the study of human pathology. The main conclusion is that whenever imperfect drainage of the appendix occurs and "persists for but a brief period of time, there are bound to arise very definite, and at times serious, consequences." "As a direct result of the interference with drainage, the innocuous bacillus coli communis is converted into a virulent organism." Dr. Frazier regards the mere presence of foreign bodies in the appendix as of little significance, but his trials were mainly made with smooth bodies which could be forced out by the tube. There is no doubt that infected foreign bodies such as sharp fragments of fruit stones, tin tacks or fish bones have often been the immediate cause of suppurative appendicitis. So far as the publishers are concerned the work does them great credit. The get-up of the book is excellent, and it is remarkably free from printer's errors.

Current Literature.

FOREIGN EXTRACTS

An Auscultatory Sign of Senile Arteriosclerosis—Friedmann has found that as age advances, the heart sounds, propagated along the aorta, become more distinct lower and lower down the back to the left of the spinal column, and, when arteriosclerosis exists, they are best heard below the space between the left scapular angle and the VII Dorsal Vertebra—[*Wien Klin Woch*, 25 of 1900]

Mercury Inhalations in the treatment of Syphilis—Kutner has obtained good results from inhalations of a mercurial salve which is volatilised by heat, the patient wearing a kind of mask respirator and inhaling the fumes for half an hour daily. Although mercury can be found in plenty in the urine, proving that it has been absorbed, stomatitis does not occur — [*Berlin Klin Woch.*, 2 of 1900]

Iodoform Injections in Syphilis—Lang, the originator of the treatment of *Lues venerea* by hypodermic and intramuscular injections of mercurial salts, employs the following mixture when iodine is indicated as in hypertrophic syphilides or gummata

R Pot Iod gr 75
Codein Hydroch gr 1—1

Aqua destill m 75, dose m 17—51 (1—3cc) for an injection, the solution to be well warmed before being used. The codeine is given to alleviate the pain caused by the injection into the intramuscular tissue in the gluteal region of the K I solution

Or the following may be used

R Iodoform gr 75
Vasolin liq gr 85

Mft m 8—17 ($\frac{1}{2}$ —1cc) for an injection

For glandular swellings Lang has found the injections of 1 or 2 minims of this iodoform emulsion into the neighbourhood of the swelling very useful — [*Semaine Med* 28 of 1900]

Blood-letting in Heatstroke—Carl Klein relates the case of a stoker on an American liner who suffered from heatstroke and became convulsed. The man was "saved" by the abstraction of gr 220 (5vii) of blood. Klein recommends this treatment to the notice of military surgeons — [*Munchen Med Woch.*, 27 of 1900]

The limits of the normal bodily temperature—Marx, working in the Berlin Infectious Diseases Institution, has come to the conclusion that the limits assigned by Wunderlich to the normal temperature of the human body are not correct. As our readers are aware, Wunderlich classified the observed temperatures thus —

	C.	F.
Febrile	above 38°	100 4°
Sub febrile	above 37°	99 5°
Normal	36 6°—37 0°	97 9°—99 5°
Sub normal	36°—36 5°	96 8°—97 5°
Mild collapse	35°—36°	95°—96 8°
Dangerous collapse	33 5°—30°	92 3°—90°
Fatal collapse	below 33 5°	92 3°

Marx, however, believes that the normal temperature should be taken to lie between 36° and 37 2°c, i.e., 96 8° and 99 0° F. That in India at any rate "normal" temperatures of 37 2°c, i.e., 99° F are by no means uncommon, most of our readers will admit, and we question whether Wunderlich's limits should not be taken to be correct.

Heroin as a substitute for Morphine.—Nied has found that in doses of $\frac{1}{12}$ grain heroin is well borne and gives refreshing sleep and freedom from pain and cough in chest diseases, where morphine would cause disagreeable after effects. Heroin is a diacetyl ester of morphine — [*Deutsche Med Woch.*, 27 of 1900]

A Diagnostic Stain for the Parasite of Malaria—Reinhold Ruge recommends the following —

Water 100cc = 1690 minims

Na₂Co₃ 3 grains Dissolve and heat, and while the solution is boiling add methylene blue (pure medicinal Höchst) 5 grains. Let the solution cool and stand for forty eight hours. Filter, and it is ready for use.

On the blood preparation drop a few drops of this stain, and wash them off at once, the preparation is stained a dull violet. The red cells are stained

yellowish green to bluish green, the annular parasites become blue black, the larger forms of the parasite are coloured grayish blue to dark blue, and the nuclei of the leucocytes take on an intensely blue stain.

The stain is, however, only serviceable for preparations which are less than a month old. New or old preparations can be easily stained if a 1% solution of the methylene blue is used, with three grains of the carbonate of sodium in 100cc — [*Ibid.*, 28 of 1900]

Subcutaneous Injections of Gelatine in Aneurysm—At a recent sitting of the Academy of Medicine, Lancereaux noted that the treatment of aneurysm by subcutaneous injections of gelatine which he has long recommended, has not caught on. He was able to bring forward the following proof of the efficacy of the treatment. About eighteen months ago he had under treatment a case of aneurysm of the aorta, in which the classic treatment by rest, and K I had no effect on the aneurysmal tumour which was gradually increasing and threatened to perforate the thinned skin in the sternal region, the costal cartilages having been already eroded. Subcutaneous injections of gelatine were given, with the result that the tumour ceased to grow, became smaller and firmer, and in the end the patient returned to his ordinary avocations.

He died the other day from heart failure following an attack of influenza, and the autopsy showed that the enormous aneurysmal sac was full of hard impermeable blood clot — [*Semaine Med.*, 29 of 1900]

Nerium Oleander in Heart Disease.—For several years Mendelssohn of Berlin has been studying the action of this plant in cases of heart disorder, and finds that for commencing failure of compensation, chronic myocarditis and fatty degeneration of the heart muscle such as is frequently met with in old alcoholics the following infusion is useful:

R Fol. vern. oleand gr 7—15
Infus in aqua bullient 5vii

Of this the patient takes a dessertspoonful every two or three hours.

In most cases one finds—provided that the heart muscle is not profoundly affected—that the pulse becomes slower and more regular, the palpitations rapidly disappear, diuresis is increased, and the peri-articular infiltrations—the heralds of anasarca—become less marked and finally vanish.

Where, however, the heart muscle is profoundly affected these satisfactory results cannot be obtained, unless digitalis is given — [*Ibidem*]

W D SUTHERLAND, M B

Correspondence.

THE DHOTI AS A CAUSE OF HYDROCELE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—With reference to your remarks on the causation of hydrocele in the November *Indian Medical Gazette*, I believe that the cause in a very large number of cases is the clothing. In the dhoti as worn in the N W P the piece that passes between the legs is drawn very tight. This obstructs the circulation in the scrotum, especially of the veins. In Bengal, I believe, the piece between the legs is not drawn so tight, hence fewer cases, while in the Punjab very few pass this piece between the legs and a large number wear trousers. In Europeans it will be found that a large number will own to tight bracing, the trousers being drawn tight into the fork. I believe that hydrocele is due to obstruction brought about by mechanical means.

BAREILLY,
November, 1900

Yours, &c,
E JENNINGS, M B,
Capt., I M S

[This is an interesting question on which we ask the opinions of our readers. In Behar we find most men wear a tight langot, which in cases we have examined does certainly press firmly on

either side of the root of the penis. Bengalis, we believe, do not wear the *lungot*. Often it will be found that a *lungot* is worn after the occurrence of a hydrocele, rather than before it. The point is worth investigating, the surgical books we have been able to consult do not help one much. Wrestlers and such athletes wear very tight *lungots*, do they suffer especially from hydrocele?—*Ld I M G*]

BERI BERI IN THE NORTHERN CIRCARS

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—I have made it a rule not to discuss matters that have come to my notice during official work, either in professional or in lay papers. Hence, when in your issue for June 1899 (page 211) you criticized certain opinions that you declared had been expressed by me, I thought it both unnecessary and undesirable to enter into discussion in your paper on the subject referred to. That article was characterized by crediting me with opinions that I have never expressed, and with others that bore an erroneous interpretation. But I recognized that, although you had taken the unusual course of giving your decision on the *ex parte* statement of the author of the pamphlet you reviewed, you had a right to form your own conclusions upon such evidence as was before you. In your review of Captain Fearnside's pamphlet, you had to deal solely with such interpretation of official records as he chose to make; you had not those records—or, at least, in their complete form—before you. In your issue for November 1900, you again refer to this matter in an editorial paragraph, and remind your readers of your issue of the previous year.

It is not my intention to enter into the pros and cons of the question, as represented by Captain Fearnside, but to reply, as briefly as possible, to the various points which you selected from his statements to support your arguments in the two issues mentioned. I have, nevertheless, to apologize for the length of my communication, which I am afraid cannot be avoided in discussing so diffuse a subject.

In the first place, allow me to refer you to your article of June 1899, in the first sentence of the 2nd paragraph, you state as follows:—"Owing to the unhealthiness of this jail in 1896-97, the Surgeon General of Madras and the Sanitary Commissioner visited it, and reported to Government that in their opinion the disease to which high mortality was and had been due was beri beri." This statement is absolutely incorrect. We did not ascribe the mortality in the Rajahmundry Jail to beri beri, but pointed to the existence of beri beri, during several years previously, as likely to unfavourably influence mortality, in that sanitary errors and the occurrence of other diseases would find here constitutions already shaken. The actual words (which were stated in *italics* in the Conjoint Report) were "What then we would contend is that so long as the jail population is liable to beri beri, any sanitary error committed is likely to be at once responded to more readily than might be expected in a population not suffering from such disadvantages" (April 1897). This summary of opinion was stated with the special object of demanding alteration of the structure of the jail and securing various sanitary reforms, considered essential in buildings where beri beri had appeared from time to time. The necessity for these alterations with reference to beri beri, I had as early as 1891 (when the jail was fairly healthy) urged attention to, and continued to do so up to the period of the excessive mortality of 1898, when, at last, they were attended to, with the result that the jail is no longer unhealthy. In this, "history has repeated itself." In 1865-66, the Superintendent of the old District Jail, Rajahmundry, reported that 51 deaths had occurred in a strength of 118, and that "there were 38 cases of diarrhoea and 5 deaths. Anasarca—two remained from last year—44 admitted and 26 died, which usually proved fatal by effusion into the chest and pericardium [italics not in original]. Since the plaster has been removed from the walls both diarrhoea and anasarca have entirely disappeared." In the following year, instead of 51 deaths, the old District Jail had only 10 and, excluding cholera and small pox, for four years subsequently there was but one death each year! To my mind, the disease characterized by anasarca and causing death by effusion into the chest and pericardium, which was got rid of by a process of radical disinfection and removal of unfit structures in 1866 and transfer of affected men, there is a remarkable resemblance in epidemic behaviour to that milder form of beri beri intoxication which has been apparently eradicated, for the time being, in the existing Central Jail, by measures directed to the renewal of unfit floors and walls, disinfection, transfer of the infected, general attention to sanitary details, and prophylaxis against anchylostomiasis and malaria. In 1866, when, after a period of fairly good health, sickness became first marked in the Central Jail, I reported officially as follows—"I consider from enquiries made as to the nature of work of weakly men that more care is requisite in selecting the description of labour on which they are placed."

[A subsequent investigation by the Inspector General of Prisons proved that this want of discretion was a factor of much importance in regard to the general decline of health] * * *

"My opinion of the present position in this jail then is as follows—The jail is one notoriously unhealthy, and although there are hopeful fluctuations from time to time, on the whole, the tendency is to considerable mortality from all causes, plus the exhibition of a special disease, beri beri, (2) that no effort has been made by modifying the structure of the buildings to place the inmates in a correct position to resist the influence of this special disease, (3) that, granting this disease is endemic and that persons placed under good hygienic conditions more especially as to suitability of food (as clearly proved of late in connection with the Japanese navy) can successfully resist beri beri intoxication, it may well happen that a general lowering of the health of those exposed to its influence may occur, although not proceeding so far as to declare itself in the form of typical beri beri, (4) that in addition to incorrect buildings under the special circumstances stated, errors have occurred in important matters in connection with the preparation of grain, and the issue of flour, and of vegetable diet, and control of water purity, which factors acting upon a population, the health of the more susceptible members of which has been lowered, have readily combined to increase the general sick rate, and diseases referable to the intestinal tract. My recommendations amount to revision of building, water supply arrangements, and details as to food. In addition, the Medical Officer should be required to carefully separate those suffering from grades of anaemia, spongy gums and dyspepsia (as shown by great flatulence), and where work is possible—a certain amount being desirable—its nature should be defined by him." I further drew attention to the fact that "although the cubic space is duly marked, it seems to me likely height has been too much trusted to, and that the fact that space should not be regarded as 'available above 13 to 14 feet has been ignored. [After the excessive mortality of 1898, it was found that the jail destined for 1041 had really air space for 880—a factor of importance in reference to beri beri.]"

It ought to be evident from the above that neither in my ordinary reports nor in the conjoint report did I hold beri beri was the sole, or even chief cause of the death rate, but that I regarded its existence as a special danger in the midst of many other conditions, and that I held the correction of these conditions was the first step towards placing the population under normal conditions of resistance to ordinary diseases. My warnings on this point of 1894, 1896, 1897, 1898, were well justified by the fearful mortality and sickness which occurred in 1898, on the accession of a weakly famine population subjected to unfavourable conditions of exposure in a wet camp, overcrowding, and unusual prevalence of malarial fever.

You state it was suggested in the conjoint report that the introduction of this infection [beri beri] 'was owing to the transfer of a batch of Burman convicts to the Rajahmundry Jail in that year.' This is again incorrect. It was a particular point of my argument that beri beri had existed in the jail before the arrival of these men (in 1887, not as suggested by you in 1896-97), and I ascribed to them the rôle only of concentration of the virus. The actual words used are, "But the medical returns show that one case of beri beri was admitted in 1887, previous to the arrival of the Burman convicts. Further, it would be observed that the statement given above shows admissions to the extent of 3.3 per mille in the year 1882 for this disease." I would add that from 1887 to 1896, beri beri found an important place in the Jail Returns under successive Medical Officers. I am not alone in thinking concentration of beri beri implies risk. Manson states "The liability to introduction of the beri beri germ is proportionate to the number of people coming into it, and to the number of different centres from which new comers are derived. Indeed, I may state that, in my opinion, the disaster which occurred to the Rajahmundry Jail population in 1898 was indirectly due to cessation of the custom, which had obtained up to the first quarter of 1896, of instantly transferring cases of beri beri from the endemic area to Vellore, subsequent to that date, this sensible precaution was not carried out at all or was effected in the hesitating manner due to disbelief in their nature. In drawing attention to this subject, we stated in the conjoint report, "Thus the most striking beneficial results, subsequent to 1887, were obtained in 1893, when the Inspector General of Prisons grasping the importance of the step directed he should be informed of such cases, and that arrangements for their removal should be made by telegram." I must ask it to be remembered that the Burman convicts were no mere passive bearers of the hypothetical germ of beri beri, of the batch of 21 men, 13 died of this disease.

Again, you inform your readers, "the symptoms upon which the Sanitary Commissioner appears to have based his opinion were the occurrence of anaemia and dropsy, complaints of numbness, and a few cases of heart symptoms." I think I have a special right to complain of this statement on your part. I have never based my diagnosis of beri beri upon "anaemia and dropsy," as I shall presently show you. The only way I can account for your ascribing this opinion to me is that Captain Fearnside in his pamphlet states, "the usual symptoms of beri beri" described in this jail had been as follows—"anaemia, puffiness of the face, and oedema of the feet, difficulty of breathing and of oppression of the chest, numbness and burning sensation

(Neuritis) of the extremities" Now, although this statement is made within inverted commas, Captain Fearnside has neglected to state what authority he is quoting. Indeed, upon this text devoid of authority he founds his whole discussion, and completes his pamphlet by quoting three typical cases. Two of these he declares "would have been considered in former years typical of beri beri," and the other he states specifically "was considered one of beri beri" during the epidemic of 1898—had it not been for the interposition of his "high power microscope." Now, I have to state that I have nowhere given the opinion that "anemia and dropsy" are symptoms that betoken beri beri. On the opposite, I cling to the insufficiently supported opinion that in this disease so far as the conjunctiva is a gauge of this condition—there is, in the absence of secondary disease, not only no anemia but the conjunctiva in many acute cases is peculiarly brilliantly tinted—a condition that I think is possibly connected with the disturbance of the vasomotor system, which seems to me to accompany this disease. As to the three typical cases reported by Capt. Fearnside, I have to state that a list of cases suspected of beri beri by myself and the Surgeon General was kept by me, and that the numbers of these men do not occur, and that I have no reason to believe that either of us was so ignorant of malarial cachexia as to have failed to recognize the nature of these selected cases. A perusal of the following extract from one of my reports will show you that, on my inspection in 1898 I carefully differentiated, in the presence of the Inspector General of Prisons and Capt. Fearnside, cases of oedema that the latter could account for by appealing to anemia and consequent oedema, and that not only did I not ignore the existence of malaria and its evil effects on the population, which is his prime contention, but that I was the first to impress upon Capt. Fearnside, in the midst of his hesitation between what he claimed to be the result of a malarial germ of infective qualities and relapsing fever for which he strongly contended—the simple fact that he had to deal with malarial fever acting upon a population already subjected to beri beri intoxication—

"In the camp, a considerable portion of the men presented puffy faces and oedematous extremities to a more marked extent than seen on any previous inspection. * * *

The first indication in this enquiry was to ascertain whether the fever now complained of was causative of mortality in the present time, or whether it had brought about the mortality in the past months. So far as could be gathered, under the unfavourable circumstances described above, the fever was not otherwise than of mild and ephemeral type, and was not directly connected with the mortality, it was also of recent occurrence, and was, therefore, not connected with the past mortality. The next question to decide was whether the fever had indirectly affected the gravity of prevailing diseases and mortality. Thus, it might well be that the fever had increased the number presenting puffy faces and oedematous feet. Enquiries, however, elicited no definite relation between the two events. A few declared the oedema had occurred subsequent to the fever, others that it had appeared gradually without fever. It, therefore, seemed that, whilst the oedema might follow an attack of fever, it was not essential it should precede it. As to the exact nature of the fever, whilst explicitly not committing himself to a definite opinion, the Medical Superintendent [Capt. Fearnside] suggested that "relapsing fever" was present, and, indeed, had so far convinced himself on this point as to state in the hospital records, that in a case of pneumonia, "the symptoms may be only due to spirilla present in the lungs." It was, of course, desirable to determine whether malaria or relapsing fever was suffered from that the blood should be examined microscopically, and for this purpose, finding the Superintendent unwilling to place his private instrument at my disposal I asked him to forward specimens to Madras, this, however, he has neglected to do up to date. The clinical symptoms, however, are such as to negative relapsing fever definitely, and to demonstrate sufficiently obviously fever of a mild malarial type. Again, a very large number of examinations of urine negative the connection between the presence of oedema and kidney mischief, indeed, the persistent search for albumin, with negative results, seems in some measure to account for the absence of sufficient time on the part of medical subordinates for effecting detailed measures in respect to the sick. A further suggestion of the Superintendent was that a malarial fever was dealt with that had been brought about by germs that had undergone an increase of virulence sufficient to cause infectiveness. Of this infectiveness, however, he was not in a position to produce evidence. This explanation is similar to that advanced by Surgeon Captain Rogers with reference to "kala azar." The infectiveness of this disease is still [1898] a point under discussion by the medical profession, but to argue at this stage that the malarial germ (a protozoan) can acquire a direct infectiveness is at least premature. That ankylostomiasis would undoubtedly favour the existence of oedema was in a former report conceded, but such a result, if uncomplicated by any other disease, would be looked for solely in cases presenting a high state of anemia following the blood sucking propensities of the parasite concerned. An examination of 59 cases failed to establish a connection between anemia and the oedema. Indeed, at

least two cases that were selected as typical for discussion presented no anemia whatever, they were physically well developed men, and did not suffer from any disease of the heart. In one of these oedema of the extremities was not bilateral, thus pointing decidedly to deranged nervous control and not to a blood condition, slight oedema over the tibia was also evident in men not obviously anemic. In one case the patellar reflex on both sides and, in another, on one side was found impaired, in others, certain of the reflexes was exaggerated. Every effort was made to prevent the prisoners understanding the subjective symptoms of beri beri, yet the feeling of precordial tightness, of burnings in the hands and feet, twitchings of the muscles, and palpitation of the heart were complained of in various instances. In this connection, it must be remembered that twenty eight cases which were regarded as most resembling beri beri had, previous to my inspection, been transferred to Vellore by the Superintendent.

In reference to the admitted existence of ankylostomiasis, it was found that the Superintendent had, as a matter of routine, exhibited both santonine and thymol for several months. He declared the latter had not been given as systematically as he could have wished, as the bazaar supply did not equal his demand. Still, he admitted that a very large portion of the prisoners had been treated, as a routine measure, since he had taken charge in 1897. He was, however, not in a position to show that this measure had either diminished the number of cases suffering from puffiness of the face and oedema of the feet, or had produced an improvement in the general health of the population. On the other hand, the statistics given in paragraph 2 show that, whilst up to July some care as to beri beri had been exercised, subsequently no special selection had been undertaken for this disease. Although not necessarily *post hoc propter hoc* mortality and sickness set in, a circumstance that coincides generally with the history of this jail (vide paragraph 16 of the joint report alluded to in paragraph 2 of this letter).

Under the above circumstances, I see no reason to modify the opinions, and advice founded thereon given in the report by the Surgeon General and myself. This opinion was to the effect that beri beri was endemic in the jail, and that a condition of "intoxication" from this disease coupled with weakening influence of ankylostomiasis predisposed the inmates to less effectual resistance to the inroads of other diseases [from which in the then present or past history of sickness, there was not the slightest wish to exclude the important factor of malaria], and to results of unsatisfactory hygienic conditions than would be the case with the population under normal circumstances, and that it was essential that by hygienic measures calculated to decrease the chances of beri beri maintaining a hold in the building he adopted, and that side by side with these means he enforced against the spread of ankylostomiasis. In this case, the predisposition of the jail population was doubtless favoured by the admission of a large number from the hills in a weakly condition, during the prevalence of famine. In this condition prisoners would more readily be open to infection, and thus more foci of beri beri would exist within an area favourable to the persistence of the still dubious microbe producing it. There is, however, no evidence to show that the presence of those famine stricken persons had infected the jail with dysentery. As to the fever itself, it seems to be merely a superadded factor to the ordinary circumstances, affecting the health of the jail population. This disease was so far as could be judged by depending on the incomplete data at disposal, of a mild malarial type, and acted detrimentally in precipitating the puffiness of the face and oedema of the legs to which "beri beri intoxication" had predisposed the prisoners.

You then refer to the question of cardiac enlargement. Captain Fearnside, in his tables, distributes these cases under the diseases from which they died other than beri beri. This method to be of any value would presuppose that a patient having beri beri was bound to die with that disease and no other. A tendency to this opinion is exhibited in his statement that a "convict suffering from phthisis during his life which is confirmed by *post mortem* cannot possibly have died of beri beri"—an opinion in marked contrast to that held by Manson who, after quoting cases to the point, puts the query, "Does phthisis render the subject of it specially sensitive to the beri beri poison"? At the best, his tables can only be received as a rough statement of facts, but he has really made his comparison of little value, by accepting too high a standard of weight for the normal heart of South Indian natives. It is true Surgeon General Sibthorpe has given the weight as 7.8 ounces but, in the General Hospital, Madras, 7 ounces is accepted as the standard. In the large framed Chinese, Bentley gives the range of beri beri hearts (where the organs happened to be affected in his cases) as from 8 to 13 ounces. Taking then 8 ounces as the point at which departure from the normal may be accepted Captain Fearnside's table IX would yield not 25 enlarged hearts, as exhibited by him, but 65. I would add that Captain Fearnside omitted to include in his table a case having a heart

* The clinical history of beri beri shows that it is occasionally ushered in by mild fever, but it is no essential part of what is a non febrile disease.

weighing 17 ounces. This case was transferred by him in 1897 to Vellore because, as stated by him, "the case is suspected to be beri beri." By way of showing that the beri beri of the Northern Circars is quite capable of securing typical cardiac enlargement I would inform you that not only does Malcomson describe it, but that Surgeon Everard in 1866 reported cases in the Masulipatam Jail—which was in this area with hearts of 12½, 15 ounces, 12 ounces, (a youth of thirteen years) and 1½ ounces, but neither authority had the temerity to suggest that cardiac enlargement is a necessary occurrence in beri beri.

In your article, you then proceed to state "moreover the total absence of paraplegia, loss of reflexes, &c., in the recorded cases are more than strange, if the disease is beri beri." I send you photographs of two cases of paraplegia which were transferred from the Rajahmundry Jail to Vellore. Unfortunately, Captain Fearnside forgot to send "transfer notes" with these cases. According to Bentley, the method of progression of one of these cases is characteristic. Both cases developed their paraplegia after transfer. They had been three years in jail, where they could certainly not have poisoned themselves with alcohol. In the total period previous to transfer, one of the cases had admission for malarial fever for four days and ankylostomiasis twelve days, the other suffered from bronchitis, and no malarial fever, neither suffered from syphilis. There can be no reason for Captain Fearnside transferring these cases to Vellore, unless (whether he agreed with the diagnosis or not) such cases were likely for "official reasons" (!) to be classed as beri beri. It is absolutely erroneous to affirm that there were no cases of disturbance of reflexes, there were instances both of their exaggeration and absence, which apparently paradox condition was received, during my inspection of the jail with polite in redulity as to its value, by the then Inspector General of Prisons. But, although Captain Fearnside had originally conceded that at least one case was "typical of beri beri" and that a "truly neurotic gut" was present, since the exciting discovery by him that men in his Jail suffering from ague harbour the plasmodium malarie, he has chosen to inform me that this "truly neurotic gut" was due to malarial neuritis. Indeed, I may say that either as "alcoholic neuritis" or "malarial neuritis" Captain Fearnside has, to his own satisfaction, explained away all disturbances of reflexes. I may add, lest I be reminded of the fact by him, that he managed during our examination of cases (for I made a point of placing nothing on record unless he agreed with my results) in one of the instances to elicit a diminished patellar reflex, in which I had failed to produce any after repeated examination. In connection with neurotic symptoms generally, and the sudden access of dyspnoea which occur in such cases, I would quote the following replies given by Lieutenant-Colonel Lancaster in charge Vellore Jail (where most of the beri beri cases were transferred), to queries given by Captain Fearnside as to behaviour of the cases subsequent to their arrival at Vellore —

Captain Fearnside's Queries

1. How many showed ataxic gait of beri beri on arrival, and when did it disappear?
2. How many do you consider had oedema of the lower extremities?
3. In the extreme dropsical cases, how long did the albuminuria continue?
4. Do you consider that the "temor" some complained of might not be due to passive oedema?
5. Do you think that any stiffness in the gut might be due to the same cause and effusion in the ankle joint?
6. How many have shown the state described by the Japanese as "Shiyashin" which is a paroxysmal attack of violent dyspnoea, palpitation and vomiting?
7. Did any of the fatal cases show this state before death?
8. Under what headings were those sent returned in the monthly returns, and were any of these diseases subsequently changed, and, if so, how many, and to what disease?
9. In this jail I find that albuminuria is common in dysentery and is common in sequelae. Do you think any of the dropsy might be due to this cause?
10. Do you think that syphilis, malaria, alcoholism liver and kidney cirrhosis, dysentery, toxamia (ganja and opium), ankylostoma, singly or combined, explain to some extent the neuritis and dropsy and anemic symptoms?

Lieutenant Colonel Lancaster's Replies

1. Two showed the ataxic gait. In one it continued till death and in the other it disappeared under treatment for two months. [These two, with the ataxic gaits, do not include the cases of paraplegia mentioned above.]
2. Fifteen had oedema of the lower limbs.
3. Only two had general anasarca, and in these there was a trace of albumen until death.
4. Very few complained of "temor" [numbness] to any appreciable extent, and in these it could not have been due to the stretching of the skin or pressure on nerve endings, as there was little oedema to speak of.

5. The stiffness in the gait cannot be attributed to the same cause for the same reason, nor to effusion in the ankle joint as there was none.

6. Two had paroxysmal attacks of dyspnoea and palpitation unaccompanied by vomiting, and in only one case was this pretty well marked.

7. No.

8. No change was made in diagnosis [Lieutenant-Colonel Lancaster was under the impression, owing to correspondence with Captain Fearnside, that his right to alter diagnosis of cases transferred to him was open to question].

9. In no case of typical dysentery was albuminuria found, but in ankylostomiasis with intense anaemia there was albumen in urine (evocal albuminuria).

10. Yes, I consider that malaria, liver and kidney cirrhosis, dysentery and privation, ankylostoma, both singly or combined, explain to some extent the neuritis, dropsy and anemic symptoms! [To these extensive articles of faith the fact of Lieutenant-Colonel Lancaster politely subscribing in the faltering terms "to some extent," by no means implies that he did not consider that in the transfers from Rajahmundry he had not beri beri cases to deal with. Doubtless, all were not beri beri cases, but in reply to a question from the Surgeon General, he has definitely stated that he had no doubt the "majority of the cases" received from Rajahmundry were genuine beri beri.]

In regard to your more recent editorial paragraph, you introduce the subject as follows — "He [Capt Fearnside] had shown to our satisfaction that the disease hitherto considered to be beri beri* was no other than a cachectic condition due to malaria and the ravages of the ankylostoma parasite." You then proceed to state that I hold Captain Fearnside contended beri beri was due to malaria. You are not justified in making such a statement. The statement made by me was that Captain Fearnside, I.M.S., "in a pamphlet which was communicated to a professional journal and the Government of India [had held] that the symptoms usually recognised in this Presidency as beri beri† are due to a malignant infective form of the plasmodium malaria." "I feel absolutely convinced, after examining microscopically the blood of a large number of cases, that the disease known as beri beri in the Madras Presidency is not due to the presence of the plasmodium malaria." The only way you could possibly arrive at the conclusion you have is from the following sentence, after pointing out that beri beri and malarial cachexia may co-exist, and if so it was a bad look out for the patient, I state, "this is a very different matter to malaria being regarded as the fons et origo of the disease." It ought not to require me to point out after the distinct references to "the disease known as beri beri in the Madras Presidency" and to "the symptoms usually recognized in this Presidency as beri beri," that the word "disease" with which the paragraph ends distinctly relates to those expressions. Your own opening statement, as italicized by me, actually corresponds with my definition. Although you had my report before you, showing that my microscopical investigation amongst the free population extended to Amalapuram, Rajahmundry, Masulipatam and Vizianagram, which are widely scattered areas, you elect to make it understood that these were confined to "the neighbourhood of Rajahmundry." You then proceed to express doubt whether beri beri does exist in the Northern Circars, and you give a distinct statement of the facts which guide you to this conclusion, firstly, that Captain Fearnside had shown that malaria existed in the Rajahmundry jail, and secondly, that he had read papers showing ankylostoma existed. How you could reconcile yourself to come to such a conclusion on these facts, to use your own words, I am "at a loss to understand." You might just as well have informed your readers that Captain Fearnside had certified to the existence of typhoid fever in the jail, and had read a paper proving that measles existed amongst the population and that therefore, beri beri did not exist in the Northern Circars. As to your warning to the members of the profession in this Presidency not to diagnose beri beri by paying attention to oedema or anaemia but by studying the condition of the heart and peripheral nerves, with all diffidence to your editorial chair, I would state that such elementary lessons in diagnosis are not required in a Presidency where, from experience gained in the Circars, Malcomson in 1835 was the first to point to the nature of the disease in respect to the nervous system, and held clear conceptions as to the condition of the heart. It is undesirable that you should think "Cimmerian darkness," so far as ankylostomiasis is concerned, shrouded the diseases of prisoners until Captain Fearnside gave us light. The existence of ankylostomiasis in the Rajahmundry Jail was reported by Assistant-Surgeon Hadden in 1887—three years before Captain Fearnside entered the service, although, be it said to Captain Fearnside's credit, that its importance was specially insisted upon by him. In return for your hints on diagnosis, which, in my humble opinion, contain the very great and very common error of regarding beri beri as following a rigid

* Italics not in original

† Italics not in original

typo, allow me to refer you to the following remarks of Dr Manson. The italics are mine—

"Sometimes we may see a case which is completely paralysed so far as legs and arms are concerned, and perhaps wasted to skeleton, and yet this same patient may never have had a serious symptom referable to his heart, or in any way threatening his life." * * * Ho [the Medical Officer] will learn that this disease which is beri beri, commences slowly or suddenly, that it may be preceded by a period of intermitting languor, aching legs, slowly advancing oedema of legs or face, or that the patient may wake up some morning and find that during the night he has become dropsical or parietic. Thus, the disease may develop slowly or rapidly. *Equally uncertain is its progress and danger, within a day or a week, or at any time during its course, it may assume fulminating malignant characters. It may completely subside in a few days or it may drag on for months. It may get well apparently, and then relapse. It may, and generally does, clear up completely or it may leave a dilated heart, or atrophied limb muscles with corresponding deformity. The variety in the severity, progress and duration of beri beri is infinite, but in all cases the essential symptoms are the same—greater or less oedema, especially over the shins, muscular foolishness and hyperaesthesia, especially of the legs, inability to palpitation from cardiac dilation, and to sudden death from the same cause."*

"In all cases death is, so to speak, rather a matter of accident than necessity, it depends partly, of course on the intensity of the poisoning, but more on the particular set of nerves picked out by the poison." * * * The mortality is very difficult to estimate. If we include the minor forms of beri beri intoxication—what we might designate beri beri ambulans—such as slight degrees of leg paresis, pretibial anaesthesia and oedema, in our estimate, then the mortality is proportionately smaller than if we estimate it only on such cases as lay up, or exhibit serious signs of heart and other thoracic complications."

Of recent instances in which in certain epidemics the virus seems to "pick out" special parts of the system I cannot do better than refer you to the details of an epidemic which occurred in 1899 amongst the sepoy of IX Regiment, M I, which was investigated by Major Moore, Captain Giffard and myself. This was at Vizianagaram, within the Northern Circars. Whether you believe in the existence of the disease or not in that area, it may interest you to know that within 8 or 10 days after spending many hours for three days in succession in the hospital where these men were, I was attacked with a low form of fever which was followed by painful contraction of muscles of the calf, numbness and oedema, of one leg, which condition corresponded precisely with that found in mild cases amongst the sepoy, and that the symptoms in this epidemic extended from this mild form to that of spastic paraplegia attended with most painful dyspnoea.

MADRAS,
26th November, 1900 }

W G KING,
Lieut Col, I M S

[We gladly publish Lieutenant-Colonel King's paper as it throws much light upon an interesting and difficult question. Considerations of space prevent us at present discussing this question in detail. Our main point was that the co-existence of malaria and ankylostomiasis strongly suggested that these cases might (as in Assam and Ceylon) have been wrongly regarded as beri beri. Much turns upon the existence of neuritic symptoms, these Captain Fearnside's pamphlet showed were absent or what was interpreted as such were present in other cases certainly not beri beri (see resumé in Report of San Commr, Government of India for 1899 p 181 (foot of page). We shall return to the subject.—Ed, I M S.]

Service Notes

WE hear that the cadre of the Indian Medical Service is to be raised by the admission of some fifty new appointments.

THE R. A. M. C. have a novelist recently added to their ranks. Captain F S Brereton, R. A. M. C., has recently published a novel entitled "In the King's Service," a tale of Cromwell's Invasion of Ireland. Captain Brereton is a Guy's man, and joined the Corps in 1896. He has been attached to the Scots Guards as Medical Officer.

SIR JOSEPH FAIRER, Bart, M D, has been appointed a Trustee of the Hunterian Collection, R C S, in place of the late Duke of Argyll.

In the German Army courses for post-graduate instruction are provided at the cost of Government for Army Medical Officers, to such an extent that civilian practitioners are complaining that they are left out in the cold. In the Medical Department of British Army it is quite the other way, leave is not granted and officers have to pay for their post-graduate studies.

WE are glad to see that the *Lancet* has noticed the omission of certain names from the title page of the new edition of Notter and Horrocks's *Hygiene* (1900).

The foundation and more of the book is that of Parkes. De Chaumont added more, assisted by Major A M Davies. Then Colonel Notter and Major Firth took it in hand, but in the edition of 1896 only the names of Parkes and De Chaumont are mentioned.

THE little book on *Sanitation and Health* by Brigadier General R C Hart, V C, and Colonel T H Hendley, C I E, I M S, has now reached its fourth edition.

LIEUTENANT COLONEL EDGAR GFER RUSSELL, I M S, has retired from the service (dated 27th August 1900). Lieutenant-Colonel Russell has been for some years past Professor of Materia Medica in the Calcutta Medical College, and has for years been known as one of the ablest Civil Surgeons in Bengal. He formerly contributed frequently to these columns on subjects such as, chloroform, tetanus, fracture of os calcis, and on abscess of the liver. He was the author of a book on "Malaria and Spleen Disease," published in 1880. He was a Guy's man and had a distinguished career at London University, gaining 1st class honours in Zoology and a Gold Medal in Anatomy. His health broke down during the past year, and he had to go home in April last. He spent his whole career practically in civil employ and had no war service. He belonged to the same batch (March 1872) as Colonels Scott Reid, Joubert, Baolay, Hall, and Lawrie, &c. His place in Calcutta is taken by Lieutenant Colonel Harris, I M S.

Two retired officers, I M S, are employed at home in Military Station Hospitals.

THE following is a list of the surgeons on probation for the Royal Army Medical Corps who have been nominated by the Secretary of State for War on the recommendation of the medical schools of the United Kingdom—H R Bateman, M R C S, L R C P, McGill College, Montreal; J B Cautley, L S A, St Bartholomew's Hospital; H A Davidson, M B, Ch B, Aberdeen University; T Finucane, M B, B Ch, R U I, Queen's College, Cork; J L Jones, L R C S, Irel; H G Pinches, M R C S, Eng, L R C P, St Thomas's Hospital; W Riach, M D, D P H, Edin, Edinburgh University; G F Sheehan, L R C P, L R C S, Irel; S B Smith, M D, Dub, Trinity College, Dublin; W M B Sparkes, M R C S, Eng, L R C P, Lond; King's College Hospital; T F White, L R C P, L R C S, Irel; W L Steele, M R C S, Eng, L R C P, Lond; University College Hospital; A J W Wells, M R C S, Eng, L R C P, Lond; St Bartholomew's Hospital; A R C Parsons, M R C S, Eng, L R C P, Lond; King's College Hospital; and E W Powell, L R C S, L R C P, Edin, Queen's College, Cork.

In the last chapter of his book "The Great Boer War" Dr Conan Doyle among other "lessons of the war" has much to say about the working of the hospitals. He points out that the large army at Bloemfontein was dependent on a single line of rail, which was choked with commissariat stores and remounts, and consequently the hospitals were left without the essentials for their work, at the time their need was greatest. A too great tenderness for the feelings of the slim Freestater prevented the use of houses which might have been used as hospitals. He points out that the department is open to criticism in not having more men on the spot, "Capetown was swarming with civilian surgeons." Surgeon General Wilson and all did all they could, but the blame rests on the composition of the army in Africa. The medical department could not provide for the vast force of irregular troops and colonials, being only intended (and undermanned) for the Regular Army. "At the same time," writes Dr Doyle, "it cannot be denied that there is room for improvement in the personnel of the department, and in the spirit in which they approach their work. There are many conspicuous exceptions, but it appears to the civilian that there is too much that is military and too little that is medical in the relations between the department and those whom they serve. Better pay and a higher standard of examination (periodical if possible) are the only methods by which any lasting improvements can be effected" (p 529).

Dr Doyle is still more severe on the combatant branches and their neglect of the study of their profession. He notes that the transport and commissariat have been among the few pleasant surprises of the war. We may add that if periodical examinations are thought necessary, there must be periodical study leave and periodical post-graduate courses, provided not at the expense of the Medical Officer, but as in Germany, at the expense of the State.

MR LYNN THOMAS says "one of the greatest surprises in the Surgery of the War has been the extraordinary success of the *noli me tangere* principle of the treatment of abdominal and thoracic penetrating wounds."

MR TREVES' *Tale of a Field Hospital* is published, and Mr Makin is bringing out a book on his surgical experiences in the War, dealing especially with the effects of small calibre bullets

CAPTAIN P H WHISTON, R A M C, has gone to Australia with the Guard of Honour in connection with the inauguration of the Australian Commonwealth. He is a St. Thomas' man, and M R C S of 1887

THE October issue of the *Edinburgh Review* has a long well written article on the Medical Service in the War. The writer lays the blame of unpreparedness on the War Office

As the war is almost over the War Office have seen fit to grant local rank of Surgeon General to the P M O's on the lines of communications

ASSISTANT SURGEON PULLEN, I S M D, has been mentioned in despatches in China

CAPTAIN A GWYTHER, I M S, is appointed a Deputy Sanitary Commissioner, Bengal, in place of Captain B H Deane, I M S, confirmed as Civil Surgeon of Midnapore

LIEUTENANT COLONEL P DE HAAG HAIG, I M S, is appointed P M O, Malakand, vice Lieutenant Colonel O'Connor, I M S, gone to China

THE appointment of Sanitary Officer, Bengal Command, vacant by the appointment of Major R H Firth, R A M C, gone to Netley, is given to Major L P Mumbly, R A M C. Major Mumbly is an M B, London, and D P H, Cantab, and was educated at Westminster Hospital

MAJOR J C WEIR, R A M C, is appointed Sanitary Officer, Punjab Command. He is an M B, B Ch, Dublin, but appears to have no public health qualification

MAJOR J R ROBERTS, I M S, being appointed an Agency Surgeon, 2nd class, is posted temporarily to Gwalior during the absence of Lieutenant-Colonel Crofts, I M S, in China

THE bias of the *Medical Press and Circular* against the R A M C has been marked of late. In a recent issue it issues a quite unnecessary warning against valour in the field being a substitute for professional skill, and in another paragraph talks of that corps "being puffed up with a sense of its own superiority to the common sense dictates of modern science." It says "a proper military station with good drainage, pure water supply, cleanliness and European cooks and bakers would be practically proof against the inroads of enteric fever." Quite so, we suppose every senior Medical Officer in India has written the same in his Annual Report for years past, but the "Indian Army Medical System" as the critic calls it, rather confusedly, is scarcely responsible for the non attainment of these desiderata. After all enteric fever is more difficult to control than our armchair critic seems to think. Not even the palace of the Tsar of all the Russias is proof against its "inroads."

CAPTAIN R BIRD, M D, F R C S, I M S, publishes a series of cases of Volvulus in the St Bartholomew's Hospital Reports

LIEUTENANT COLONEL J YOUNG, M B, I M S, acts as P M O, Punjab Frontier Force, vice Colonel G McB Davis, M D, C B, I M S, gone to China as P M O, vice Lieutenant-Colonel Bookey, I M S, invalided

THE promotion of Colonel G M R Hay, I M S, to rank of Surgeon General is antedated to 1st April, as shown in October's Army List. He is now P M O, Madras Command

IN India there are now eight officers holding the rank of Surgeon General, three belong to the R A M C, viz, Taylor, Catherwood and Price, and five to the I M S, viz, Harvey and Spencer in Bengal Presidency, Bainbridge and Hay in Bombay, and Sinclair in Madras

LIEUTENANT COLONEL LEWIS, I M S, succeeds as Professor of Ophthalmic Surgery, Medical College, Calcutta, from 15th December 1900, at which date the temporary re-employment of Lieutenant-Colonel R C Sanders, I M S, ceased

THE following is a list of the Medical Officers of No 4 General Hospital, now in Calcutta which is receiving the sick and wounded brought back from China—Lieutenant Colonel J A Nellis, I M S, P M O, Major L A Pirani, I M S, F R C S, Registrar, Major N P Sinha, Major K Prasad, Captain J M Crawford, Captain L S Peck, Captain C A Lane, Captain A J Stevens, Lieutenant C Sprawson, and Lieutenant W Lapsley, all of I M S, are the Medical Officers

WE hope in next issue to publish some Notes on cases of sick and wounded from China

ON 1st December there were forty nine sanctioned appointments in the Civil Medical Department, Madras, and fifty six names borne on the rolls, of these twenty six were absent, mostly on temporary military duty. A few were absent on sick leave, viz, Lieutenant-Colonel Harrison (leave expired 23rd October), Lieutenant-Colonel W R Browne, I M S (leave will expire 6th January 1901), Lieutenant-Colonel Allison (leave will expire August 1901), Lieutenant-Colonel Maitland (leave expired 30th December 1900), Lieutenant-Colonel J C Marsden (leave expired 23rd December), Lieutenant-Colonel W B Browning, C I E (leave expires 5th February 1901), Major Patch (leave to expire June 1901), Major F J Crawford (leave will expire 26th November 1901), not a single officer is on leave, other than sick leave

MAJOR F P MAYNARD, I M S, having been offered the Civil Surgeoncy of Patna has returned from furlough. He has just taken his F R C S (England)

CAPTAIN J CHAYTOR WHITE, I M S, at present on furlough, is working in the Pathological Laboratory at Netley

CAPTAIN A J GWYTHER, I M S, is on special plague duty in Behar, where plague is pretty bad just now, especially in Gya, Patna and Monghyr Districts

GREAT credit is due to Major C E. Sunder, I M S, and Assistant Surgeon Harvey for their successful efforts in making inoculations popular in Gya

THE Indian Medical Service Dinner is to be held on 2nd January 1901 in Calcutta, at the Saturday Club, Surgeon General R Harvey, M D, C B, I M S, will be in the chair

LIEUTENANT COLONEL CROFTS, I M S, Captain C M Moore, I M S and Lieutenant Tate, I M S, have returned from China in the Hospital Ship *Qualor*

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

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Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co, Calcutta.

Annual Subscriptions to the *Indian Medical Gazette* Rs 12, including postage

BOOKS, REPORTS, &c, RECEIVED

Notter and Horrocks Hygiene (J & A Churchill.)
Allchin's Manual of Medicine, Vol II (Macmillan & Co, 1900)
R Harrison's Stone and other Disorders (Churchill, 1899)
Gynaecological Operations, by Skene Keith (Young J Pentland.)
Hygiene, by Walter C Pakes (Methuen & Co)
Memoirs of Edward Hare, by Major E C Hare, I M S (Grant Richards 1900)
What to do in Cases of Poisoning 9th Ed, Murrell (H K Lewis, 1900)
Indian and Colonial Addendum to B P (Advance Copy)
Materia Medica for India, by Foynder and Hooper Calcutta Thacker, Spink & Co, 1901
Medical Jurisprudence & Toxicology, F J Smith (J & A Churchill, 1900)
The Charlotte Medical Journal.

COMMUNICATIONS RECEIVED FROM —

Capt O Duer, I M S, Rangoon Major E H Brown, I M S, Alipore Major A Buchanan I M S, Nagpur Capt. Alcock I M S, Madras Dr Sen, Madras, Major D G Crawford, Hooghly Dr D F Keegan, London, Mr Reg Harrison, London, Capt Cleme ha, I M S, Ranchi Major Maynard, I M S, Patna Capt. Birdwood, I M S, Umballa Major W B Lane, I M S, Montgomery, Capt J G McNaught, R A M C Deolali, Major O R M Green, I M S Mozufferpur Major J H T Walsh, I M S, Berhampur Capt. Cornwall, I M S, Madras, Capt A Cochran, I M S, Jhelum, Major A. T. Brown I M S, Peshawar Lieut. O Meara I M S, Blau Mr Lieut. Col T Grainger, I M S, Mothair, Lieut Col R N Campbell, I M S, Purnea, Capt. Fearn side I M S, Rajamundry, Major J Smyth I M S, Mysore, Lieut. Col W H Henderson, F R C S I, Poona, Capt. Maddox, I M S, Chapra, Major E Roberts I M S, Simla Major D M Mohr, I M S, Chittagong Brigade Surgeon Forbes Keith London, Messrs W B Saunders & Co Philadelphia, Capt Chaytor White, I M S, Netley

Original Articles.

NOTES ON THE HISTORY OF THE BENGAL MEDICAL SERVICE

By D G CRAWFORD, M B,

MAJOR, I M S,

Civil Surgeon, Dughli

(Concluded from page 4.)

UNDER the rules of 1796 all leave in India, at the Cape, or anywhere east of the Cape, counted as service for pension. Leave to the Cape was very popular. The shorter sea voyage, the climate of the Cape settlements, and the advantage of the leave counting as service for pension led to a great many officers availing themselves of this leave.

The furlough rules of 1854 were introduced from the 1st of February 1854, and were published, with a few modifications, in a general order dated 17th November 1854. A short summary of these rules appears in the East India Registers of 1855 and 1856, and they are printed at full length in the East India Register for 1857.

Under these rules one furlough on private affairs, of two years, was allowed after ten years' service in India, and a second furlough of two years after a second spell of ten years in India. Under no circumstances was furlough on private affairs allowed to be cumulative, or to extend to more than two years at one time. But an officer who put in twenty years at duty before taking his first furlough, might take his second spell of two years' furlough after twenty-five years' service (General Order of 16th June 1856).

Furlough on sick certificate was allowable for not more than eighteen months in the first instance, but might be extended for a period of eighteen months more, or three years in all.

Officers on staff employ were allowed leave on private affairs only up to six months, on sick certificate up to fifteen months, with retention of a lien on their appointments. If they took leave for a longer period, they forfeited their appointments. Staff employ included general officers, the whole army staff, both general and regimental, members of the Medical Board, superintending surgeons, and all officers in either civil or political employ.

The necessary subsidiary leave was given both on going on and on returning from furlough. All leave, except subsidiary leave and privilege leave of one month in six, was counted as furlough, even short periods to sea or in India were so counted. This, of course, did away with the former privilege of leave east of the Cape counting as service. (The phrases "subsidiary" and "privilege" leave are not used.)

The periods of leave allowed to count as service for pension were two years in twenty, three in twenty-five, and four in thirty. Medical officers only were further allowed to count one year and eight months in seventeen years' service, other officers had to serve for a minimum of twenty years.

All furlough on private affairs was subject to the exigencies of the public service. On this occasion, as on all subsequent occasions when new furlough rules were introduced, officers then in the service were given the option of retaining the old, or adopting the new rules.

The various furlough regulations subsequently issued were those of 1868, 1875, and the present Staff Corps rules of 1886. There is now no officer serving in the Indian Army who is under any rules older than 1868, except three Generals in the Unemployed Supernumerary List, who are under the rules of 1854.

Retirement—The East India Register and Army List for 1813, the oldest which I have been able to consult, gives the following regulations. Retirement on pension was permitted after 25 years' service in India, inclusive of three years' furlough, *i.e.*, after 22 years actual service in the country. The pension given to an officer retiring at 25 years was the full pay of an infantry officer of the rank to which he had attained.

The following scale of pensions is laid down for medical officers—

A member of the Medical Board, who had served in that capacity for not less than two years, and not less than twenty years in India (including one furlough of three years), £500 per annum.

A Surgeon of a General Hospital, who had held that position for not less than two years, and had been in India not less than twenty years (including one furlough of three years), £300 per annum.

Other Surgeons and Assistant-Surgeons, who had been in India not less than twenty years (including one furlough of three years), the pay of their rank.

Subalterns and Assistant-Surgeons, who had been in India not less than six years, and were medically unfit for further service, the half pay of Ensign (£36-10-0 per annum).

In the East India Register for 1836 appear certain additions, mostly general, one referring to medical officers only. By the latter Superintending Surgeons, who had been in that station not less than two years, and whose total service in India (including one furlough of three years) was not less than twenty years, were allowed £300 per annum as pension, after five years as Superintending Surgeon, £365 per annum. If invalided on account of ill-health, they got £300 at any time after promotion to that rank, £365 after three years' service in the rank. (As very few officers reached the rank of Superintending

Surgeon much under thirty years' service, the restriction of these rates of pension to Superintending Surgeons who had served *twenty* years in India, seems somewhat unnecessary.)

By the rules of general application, officers invalided with less than three years' service might be granted an allowance from Lord Clive's Fund. Officers invalided on account of wounds received in action, or ill-health contracted on duty, after three years' service, might retire on the half pay of their rank.

In 1843 the following scale of pensions for medical officers came into use —

Surgeons after 20 years' service, inclusive of 3 years' furlough	£191 per annum
Surgeons after 28 years' service, inclusive of 3 years' furlough	£300 "
Surgeons after 32 years' service, inclusive of 3 years' furlough	£365 "
Surgeons after 35 years' service, inclusive of 3 years' furlough	£500 "
Surgeons after 38 years' service, inclusive of 3 years' furlough	£700 "

Officers promoted to Superintending Surgeon or Member of the Medical Board during the next ten years were given the option of accepting the new scale, or continuing on the old scale.

In 1857 the periods of service for pension were reduced as follows —

After 17 years, £191	After 29 years, £365
" 20 " £250	" 32 " £500
" 25 " £300	" 35 " £700

Pensions from Lord Clive's Fund might be given, in addition to the pension given by the Company, to officers who were not possessed of property of more than a certain value, varying from £4,000 in the case of a Colonel, to £750 in the case of an Ensign. The pensions allowable to medical officers from this fund were

Surgeon	£ 91 5 0 per annum
Assistant Surgeon	" 45 12 6 "

Admission — Regulations for the admission of Assistant Surgeons appear for the first time in the E I Register of 1822. The Assistant Surgeon, when nominated, had to be over twenty years of age. As regards his professional qualification, he must have a diploma in Surgery from one of the Colleges of Surgeons, London, Edinburgh, Glasgow, or Dublin, or a degree from Glasgow University (It is curious that Glasgow is the only University mentioned). To show his proficiency in medicine, he had to produce a certificate of having attended a course of lectures on practice of Physic, and the practice of a General Hospital in London, Edinburgh, Glasgow, or Dublin, for at least six months. He was then examined as to his knowledge of anatomy, physiology, and medicine, by Dr Chambers, the Company's Physician in London.

Having passed this ordeal, the intending Assistant Surgeon had to attend a course of lectures in Hindustani by Dr Gilchrist, to

execute a covenant in the Office of the Company's Secretary, finding as securities to the extent of £500, and to pay for his passage to India, £95 at the Captain's table (first class), or £55 at the third Mate's table (second class).

In 1828 the following rules were added, that the Assistant Surgeon must possess a copy of Annesley's "Sketch of the most Prevalent Diseases of India", and must embark within three months of the date of his acceptance of his appointment, and of his being sworn in. The condition of finding securities for £500 was left out in 1828.

In 1834 the Assistant Surgeon was required, as a condition of his appointment, to subscribe to the Military or Medical Fund, and in 1842 (in Bengal only), to the Military Orphan Society. In 1836 the age for admission was raised to 22 years, at which it stood till within the last few years. In 1836 also attendance on the practice of a Provincial General Hospital for six months was recognised as qualifying for entrance to the service, provided that such hospital had a staff of physicians as well as of surgeons, and contained at least 100 beds. In 1843 a certificate of proficiency in cupping was also required.

In 1848 the Assistant Surgeon, if not already possessed of a diploma, was sent before the Royal College of Surgeons, London, for examination. In 1852 he was required to produce certificates of three months' attendance in clinical instruction at a lunatic asylum, and three months at an ophthalmic hospital.

Competitive Examination was introduced for the first time in 1855, the first examination being held on the 8th January. The conditions of competition appear in the E I Register of that year.

The examination was open to all natural born British subjects between 22 and 28 years of age, who were in sound health. The intending candidate had to produce proof of his age, a diploma in surgery, or a degree in medicine including a surgical examination (apparently no qualification in medicine was required from men who had a surgical diploma only), and the following certificates — (1) two courses of six months' lectures on practice of physic, and six months' clinical work, or twelve months' clinical work and six months' lectures, (2) three months' clinical instruction at a lunatic asylum, (3) three months at an eye hospital, (4) a course of lectures on midwifery, with the personal conduct of at least six labours, (5) a certificate of proficiency in cupping. Attendance on a course of lectures on Military Surgery was recommended only, probably on account of the difficulty of finding such a course.

The examination was partly written, partly *viva voce*, and partly practical, both by dissection and operations on the dead body, and

clinically at the bedside The following subjects for examination were laid down (1) surgery, in all branches, (2) medicine, including diseases of women and children, therapeutics, pharmacy and hygiene, (3) anatomy and physiology, including comparative anatomy, (4) natural history, including botany and zoology

In the following year a few modifications were introduced into the rules for examination. A certificate of good moral character was required, a course of operative surgery on the dead body was recommended, and successful candidates were given choice of presidency, as long as a choice remained. It was also announced that examinations would be held in January and July of each year. It will be seen that not much change has taken place in the examination since its first institution.

Before competitive examination was introduced appointments as Cadet and Assistant Surgeon in the Army were made by nomination by the Directors of the East India Company. The purchase or sale of a nomination was punished with forfeiture of appointment. Cadets and Assistant Surgeons were ranked from the date of their embarkation, according to the seniority of the Director who appointed them.

In spite of the above regulations for examination, men were occasionally appointed to the medical services who were quite innocent of any knowledge of medicine, e.g., the famous Oriental Scholar, John Leyden to the Madras Service. It is true that Leyden was not intended to be employed, and was not employed, in professional work, the appointment was made simply to give him a definite *locus standi* in the Company's service.

It appears that, besides the men appointed by the Directors at home, some appointments were, from time to time, made in India, probably Surgeons to the Company's ships.

When a batch of Assistant Surgeons arrived together, their commissions were usually dated in successive days, one after another. Occasionally two or three are dated the same day. But the first instance of a large batch all dated the same day is that of 24th January 1855, these being the first batch admitted by competitive examination.

From 1840 to 1857 Assistant Surgeons on first appointment appear in the Army List as supernumeraries, and are not always finally ranked in the same order as that in which they first appear. From April 1848 to January 1855 the discrepancies between order of entrance and order of final rank are especially numerous and great.

Pay—The pay drawn by members of the medical, like those of the other services, was small in comparison to the present rates. But in those days a man's pay was usually only a small part of his income. In the East India Register for 1813 the following rates of pay are given.

The amounts are per month, in *sowant* rupees, worth half-crown each.

		Garrison, actual pay	Garrison, with al lowances	Field, with al lowances
		Rs A P	Rs A P	Rs A P
European Infantry	Capt and Surgn	120 0 0	283 8 0	411 0 0
	Lieut and Asst Surgn	70 0 0	169 0 0	254 0 0
Native Cavalry	Capt and Surgn	179 6 4	470 6 4	560 6 4
	Lieut and Asst Surgn	109 8 0	393 8 0	363 8 0
Native Infantry	Capt and Surgn	120 0 0	321 0 0	411 0 0
	Lieut and Asst Surgn	60 0 0	194 0 0	254 0 0

At that time the pay of a General Officer was fixed at Rs 300 per month, but, as he also drew an establishment allowance of Rs 4,400 per month in garrison, and Rs 5,000 on service, he did fairly well.

In 1838 we find the rates of pay for medical officers laid down at the following rates of consolidated pay, without allowances.

	European In fantry		Native Cavalry		Native Infantry	
	Garrison	Field	Garrison	Field	Garrison	Field
	Rs A P	Rs	Rs A P	Rs A P	Rs	Rs
Surgeon	339 8 0	411	520 6 4	560 6 4	371	411
Asst Surgn	199 0 0	254	333 8 0	363 8 0	224	254

It will be seen that the rate of pay in garrison is rather higher than in 1813, in the field the total amount remains the same, but is given as consolidated pay, instead of as pay plus allowances. In 1847 the rates are given as follows, a special rate being given for Fort Artillery and Engineers. The amounts are again made up of actual pay, plus various allowances, house rent, horse allowance, and tentage, also extra batta when in the field. The field allowances were now given in garrisons over 200 miles from Calcutta, a contrast to the modern system of Presidency allowances, necessitated by the great expense of modern living in the Presidency towns. Only the total amounts of pay plus allowances are given below.

	Fort Artillery & Engineers		Cavalry & Horse Arty		Infantry, Euro pean & Native	
	Garrison	Field	Garrison	Field	Garrison	Field
	Rs A P	Rs A P	Rs A P	Rs A P	Rs A P	Rs A P
Surgeon	392 5 0	433 10 0	521 11 4	563 0 4	374 1 0	415 6 0
Asst Surgn	234 14 0	265 12 0	334 6 0	365 4 0	225 2 0	256 10 0

Funds—The Military Orphan Fund was established in Bengal at a very early date. An order of the military council, dated 11th October

1785, lays down the following rates of subscription Captains (and Surgeons) six rupees, Subalterns (and Assistant Surgeons) three rupees per month

The Bengal Military Widows Fund was instituted on 1st January 1806 Subscription for this fund was made compulsory for medical officers in 1834 The subscriptions were at the following rates per month —

	As Member	As unmarried Subscriber
	Rs	Rs
Majors and Head (Superintending) Surgeons	25	8
Captains and Surgeons	16	5
Subalterns and Assistant Surgeons	9	3

Officers who joined the fund as unmarried subscribers before 1st January 1809, became full members on marriage, without donation, after three years' subscription as unmarried subscribers For those who joined after that date five years' unmarried subscription was required to escape payment of a donation on marriage Otherwise the following donations were exacted on marriage, varying according to the length of time for which an officer had been an unmarried subscriber

	3—5 years	2—3 years	Under 2 years
	Rs	Rs	Rs
Major and Head Surgeon	400	800	1 00
Captain and Surgeon	250	500	7 00
Subaltern and Assistant Surgeon	150	300	4 00

No married officer could become a full member whose wife was not actually in Bengal at the time he joined When he married, or when his wife arrived in India, if he did not join the fund within three months, but wished to join later on, the donations, as well as the subscription rates for the months which had expired, were doubled Applicants for membership had to submit a health certificate, and also their marriage certificates Officers were permitted to subscribe at the rates, and for the widows' pensions, of a rank higher than their own, on the payment of certain donations, by no means large in proportion to the ordinary fixed donations, *e.g.*, the highest, that payable by a subaltern who wished to subscribe for the pension of a Colonel's widow, was only Rs 800 Donations were exacted then, as now, on promotion to a higher rank Members retiring or going on furlough could either continue their monthly subscriptions, or become permanent members, on payment of certain large donations A widower was allowed to subscribe at the unmarried rates, rejoining as a full member if he married again A member could withdraw at any time (before subscription was made compulsory) on forfeiture of all claims on the fund, but was not entitled to a refund of any of his subscriptions

The property of the fund was vested in Company's paper, in the names of the President and

Managers of the Fund, who were elected by the members, from among members resident in Calcutta Among the names of the managers appear from time to time, those of several medical officers, James Ranald Martin, William Twinning, A Jackson, Frederick Corbyn, Alexander Garden, John Forsyth

The pensions given by this fund were as follows —

	In India per month	In England per annum
	Rs	A P £
Widows of Colonels	200 0 0	300
" Lieut Colonels	166 10 8	250
" Majors	133 5 4	200
" Captains	100 0 0	150
" Subalterns	66 10 8	100

In 1834 we find medical officers ranked as follows for the purposes of this fund Lieutenant-Colonels and members of the Medical Board, Majors and Superintending Surgeons, Captains and Surgeons, Lieutenants and Assistant Surgeons In 1836 Medical Officers were put in a somewhat higher footing, *viz.*, Colonels and eighteen surgeons first class (including the members of the Medical Board and the Superintending Surgeon), Lieutenant-Colonels and eighteen Surgeons second class, Majors and eighteen Surgeons, third class, Captains and Surgeons, Lieutenants and Assistant Surgeons

The Medical Retiring Fund was started in order to give extra pensions by voluntary subscription, in addition to those given by the Company Its Regulations appear for the first time in the East India Register of 1848 Subscription to this fund was made compulsory in 1855 The fund gave six pensions of £300 a year each annually, to the six senior officers who had not previously come in for them If still in the service when he got the pension, the officer receiving it had to retire No officer was entitled to a pension from the fund until he had paid into the fund half the value of the pension An officer retiring after seventeen years or more of service was allowed to retain his claim to a pension, when his turn by seniority arrived This fund was taken over by Government about thirty years ago, and all the existing subscribers in Bengal, with one exception, were bought out The one officer who declined to come to terms with Government made a very bad speculation, as he died within a year of his retirement In Madras and Bombay many officers declined to come to terms, and the allotment of the pensions still goes on The fund, however, was abolished, as far as all men subsequently entering the service were concerned, from the date when Government took it over

Rank — When the service was first established on 1st January 1764, it was, as stated above, graded in three ranks, *viz.*, four Head Surgeons, eight Surgeons, and 28 Surgeons' mates The last title appears to have been very soon altered to Assistant-Surgeon A general letter

to Court, dated 23rd March 1785, gives a summary of the commissioned officers on the military establishment, and shows 4 Surgeon-Majors, 52 Surgeons, and 93 Assistant-Surgeons. Thus the strength of the service had been nearly quadrupled in twenty years.

The titles of higher ranks seem to have been somewhat vaguely used at first. The four officers who head the list of the service all held a higher title. The first, Thomas Anderson, became Surgeon-General in 1769, and died in 1777. The second, James Ellis, was Physician-General after his name, he resigned in 1789. The third, Daniel Campbell, who resigned in 1783, also held the title of Surgeon-General. The fourth, Andrew Williams, who resigned in 1787, is called Chief Surgeon. Only four officers in Dodwell and Miles' list have the title of Surgeon-Major, and two of these four had died, and the other two retired, before 1785. The titles of Physician-General and Surgeon-General do not appear again until 1843.

No definite time was fixed for promotion from Assistant-Surgeon to Surgeon, a few fortunate officers, *eg*, John Fleming mentioned below, got their promotion after about three years' service, a few took about 20 years, the general average was about 12 to 15 years. The first instance of the promotion of a large number of officers on the same day from Assistant to Surgeon was on 5th May 1826.

The title of Head Surgeon certainly was in existence before the service was instituted, as two of the officers who fell in the Patna massacre of October 1763 are entitled Head Surgeons. These officers, like the Head Surgeons appointed in the order founding the service, probably had no administrative authority. They were the officers holding the most important appointments.

When the Medical Board was constituted as such, and when Superintending Surgeons were first appointed, I have not yet been able to find out. The first officer who appears to have gone through these ranks was John Fleming, M.D., F.R.S., who entered on 17th August 1768, became Surgeon on 11th December 1771, and retired on 10th November 1813. He lived to a good old age, dying on 25th December 1827. The second is Francis Balfour, M.D., who entered on 3rd July 1769, became Surgeon on 10th August 1777, and retired on 16th September 1807. The first in whose cases I have been able to ascertain the dates of their promotion were Alexander Carnegie, who entered on 22nd December 1772, and became Superintending Surgeon in 1804, William Inghish, entered 1st July 1773, and became Superintending Surgeon on 29th April 1796, Thomas Phillips, entered 19th February 1774, and became Superintending Surgeon in 1802, and Walter Ross Munro, entered 27th July 1771, and became member of the Medical Board in 1812.

The Medical Board was a consultative rather than an administrative body, at least up to 1843. The Superintending Surgeons, however, appear to have been Administrative Medical Officers from the first. Their number was at first six, which was gradually increased to twelve, one for each division of the army. As a rule, to which there were many exceptions, the three senior officers of the service formed the Medical Board, and the next in seniority were Superintending Surgeons. Little if any selection appears to have been exercised in the choice of officers for promotion, which went by length of service alone. A few officers were allowed to decline promotion to the rank of Superintending Surgeon, and to retain appointments which were probably more lucrative. One, Simon Nicholson, is shewn in the lists for a year or two as Superintending Surgeon and Presidency Surgeon, after which he reverted to the appointment of Presidency Surgeon only. Up to 1842 both members of the Medical Board and Superintending Surgeons are shewn in the list of, and holding the rank of, Surgeons.

Their appointments as member of the Board and Superintending Surgeon are entered opposite their names, like any other appointment, such as the charge of a native regiment or of a civil station. From 1843 to 1872 they are shewn separately at the head of the service, with the dates of their appointments to these grades, but their names still appear a second time lower down in the list of Surgeons. In 1843 the three members of the Medical Board were given the titles, the first or senior of Physician-General, the second of Surgeon-General, the third of Inspector-General of Hospitals. From 12th November 1857 the Medical Board was abolished, and in its place were appointed a Director-General, John Forsyth being the first and only officer (at that time) to hold this appointment, and two Inspector-Generals of Hospitals, one for the Lower Provinces and Pegu (Bengal and Burma), the other for the N-W P and the Punjab. The officer appointed as the junior of these two Inspector-Generals, Campbell Mackinnon, stepped over the heads of sixteen other officers, many of whom were Superintending Surgeons. That the first instance in the service of wholesale supersession. In 1860 the title of Superintending Surgeon was changed to Deputy Inspector-General, which became a definite rank.

In the E I Register of 1843 the following table of relative rank appears for the first time —

Physician General	of	} Ranked with Brigadier-General
Surgeon General		
Inspector General Hospitals		
Superintending Surgeons		Lieutenant Colonels
Senior Surgeons		Majors
Surgeons		Captains
Assistant-Surgeons		Lieutenants

What length of service was required to attain the grade of senior Surgeon is not stated, probably twenty years. In 1857 the Director-General alone ranked as a Brigadier-General, the two Inspectors-General of Hospitals with Colonels.

Surgeons appear always to have ranked with Captains, and Assistant-Surgeons with Lieutenants. If the relative rank of the former appears low, compared with the length of service of most of them, it must be remembered that a century ago the Commandant of a Native Regiment or "Seapoy Battalion" was usually an officer of the rank of Captain, while an army in the field might be commanded by a Major.

Up to 1880 the administrative medical officers discharged both civil and military duties, their circles including all native hospitals, both military and civil, within their respective areas. As they were primarily military officers, this was found inconvenient to the civil administrations, and the Governments of the N-W Provinces and the Punjab appointed officers in civil employment under them as Inspectors of Civil hospitals, who inspected all civil hospitals in their respective provinces, but held no definite rank as such. The administrative medical officers of the A M D had under them the hospitals of British troops only, and had nothing to do with the native army. In 1880 the administrative ranks were again reorganised. The civil medical administration was placed under an officer with the rank and title of Surgeon-General. The first to hold that appointment was J M Cunningham, who by his promotion superseded eight senior officers. The number of Deputy Surgeon-Generals was cut down from twelve to nine, viz, four civil, for Bengal, the N-W P, the Punjab, and the C P, four military, for the Presidency, Lahore and Saugor and Nerbada districts, and the Punjab Frontier Force, and one, Assam, with both military and civil duties. The hospitals of British as well as of native troops were placed under the I M S Deputy Surgeon-Generals in military employ, the Deputy Surgeon-Generals of the A M D also taking over the administration of the hospitals of British troops in their own circles, including the hospitals in Assam, having any concern with the military. The Military Deputy Surgeon-Generals were all placed under the Principal Medical Officer, Her Majesty's Forces in India, an appointment which was open to the I M S as well as to the A M D, but which, as a matter of fact, was always held by an officer of the latter service. Since 1880 the head-quarters of the military administrative medical officers have been somewhat changed. The civil administrative medical officers of Bengal, the N-W P and the Punjab were given the *local* rank and title of Surgeon-General in 1880, in 1885 this local rank was abolished, and their title changed to Inspector-General of Civil Hospitals.

When the Indian army was reorganised into four Army Corps, from 1st April 1895, some further alterations were made. A Surgeon-General was allotted to each Army Corps, the appointments for Bengal and Bombay being given to the medical staff, that for the Punjab to the Bengal service, and that for Madras to the Madras and Bombay services alternately. The appointment of Principal Medical Officer, Her Majesty's Forces, was reserved for the Medical Staff. At the same time the civil medical administration was also to some extent reorganised. The officer at the head of the Indian Medical Service again received the title of Director-General, and the three independent services of Bengal, Madras, and Bombay were all placed under him. The number of Deputy Surgeon-Generals, or as they were now called Surgeon-Colonels in Bengal, was reduced from nine to eight.

When the number of Deputy Surgeon-Generals in Bengal was cut down from twelve to nine, in 1880, as a compensation, the rank and title of Deputy Surgeon-General were given to Sanitary Commissioners on the attainment of 26 years' service, and the then Sanitary Commissioners of the N-W P and of the Punjab, Surgeon-Majors C Planck and H W Bellew, were placed on the list of administrative medical officers. It was found, however, that the date fixed for attaining that rank, 26 years, was much too early in comparison with the run of promotion to Deputy Surgeon-General in the regular line, and that many complaints were made by the other senior officers of their supersession by the Sanitary Deputy Surgeon-Generals. The name of the third officer to attain this rank, Surgeon-Major Lidderdale, in Bengal, was therefore never placed among the administrative medical officers, but "*local rank of Deputy Surgeon-General*" was shewn in a footnote to his name. After the retirement of Drs Planck, Bellew, and Lidderdale, the rank of Deputy Surgeon-General was no longer given to Sanitary Commissioners, but, as a compensation, two extra pensions of £100 a year each were given to the Bengal service, as well as one each to Madras and Bombay.

The title of Surgeon-Major appears for the first time (with the exception of the few officers who appear to have held that title between 1764 and 1790), in 1861, when all the surgeons of over 20 years' standing have Surgeon-Major shewn in a footnote below their names in the E I Register. It was not till 1873 that Surgeon-Major appears as a definite and separate rank in the service.

Four Assistant Surgeons were promoted to Brevet Surgeon, for service in the Mutiny, from 7th September 1858. From 1st July 1873, the rank of Assistant Surgeon was abolished. All Assistant Surgeons then in the service were promoted to surgeon from that date, and all

officers subsequently entering the service from 1873 to 1891 entered as surgeons. The rank of Brigade-Surgeon was introduced from 27th November 1879. In 1891 came the grant of the compound titles with the reintroduction of the rank of Lieutenant to officers on first entering the service. Finally in 1898 came the grant of military titles (*London Gazette*, 25th August 1898, *Gazette of India*, 24th September 1898).

Towards the close of the Eighteenth and during the first half of the Nineteenth Century, an Assistant Surgeon on first arrival was either posted to the General Hospital in Calcutta, to study tropical diseases, or, if his services were required, was sent straight to military duty. He could then apply for civil employment and apparently there was no great difficulty in getting it. Nearly all civil surgeoncies were then held by Assistant Surgeons. Officers of the rank of surgeon were allowed only for six stations, called first class stations — Murshidabad, Dacca, Patna, Benares, Allahabad, and Bareilly. When the Civil Assistant Surgeon's turn for promotion to surgeon came, he could either accept it, and return to military duty, or decline promotion, and remain permanently at his civil station, in the rank of Assistant Surgeon, till his retirement or death, as no limits of age, at which an officer must retire, were then fixed. As there were only six civil stations held by officers of the rank of surgeon, the chance of getting civil employment again in the higher rank was somewhat remote. In spite of this very few men gave up promotion. Men were seldom transferred from one station to another, a Civil Assistant Surgeon usually remained at the same station to which he was first posted till his turn came for promotion to surgeon. And if then he declined to accept promotion, he was allowed to remain at his own station till retirement or death. Men who declined promotion were usually those who had settled and made a home at some particular place, and had gone in extensively for trade, planting, or zemindary, e.g., Dr G. Lamb at Malda, and Dr G. N. Cheke at Bankura, or as it was then called, West Burdwan. One officer, Francis Pemble Strong, who entered the service on 23rd September 1815, was appointed Civil Surgeon of the 24-Parganas in 1822, and held that appointment, without furlough or transfer, for thirty-five years, up to 1857. He then went home on furlough, and died in London the following spring. Many of the more important civil appointments gradually came to be held by officers of the rank of surgeon, as more of such appointments were made, e.g., Presidency Surgeoncies, Professorships in the Medical College, Calcutta, the more important Residency Surgeoncies in the Political Department, and such miscellaneous appointments as the Botanical Gardens, the Mint, &c. The Calcutta Medical College was started in 1835, the first Principal being Mountford J. Biamley, who died in Calcutta on 19th January 1837. A

school for Native doctors, however, had existed in Calcutta long prior to that date, under the charge of Dr Peter Breton, who died in Calcutta on 18th November 1830, having given up promotion to Superintending Surgeon in order to retain the appointment.

The first officer of the Bengal Medical Service on whom a decoration was conferred was Surgeon James Atkinson, who was given the third-class of the Order of the Durani Empire on 17th December 1841. The first Knighthood bestowed was that of the Bath, given to Inspector-General J. Thomson on 17th August 1850, Superintending Surgeons C. Renny and B. W. McLeod being given the C.B. at the same time. The first officer knighted was Surgeon John Spencer Login, the guardian of Dulip Singh, in November 1854, followed by William Brooke O'Shaughnessy, the founder of the Telegraph Department, in 1856, and James Ranald Martin in 1860. Two officers who served in the early part of the century, William Russell (1797—1831) and George Campbell (1799—1820), were created Baronets after their retirement, but probably not on account of their services in the Indian Medical Service. The only other Baronetcy bestowed as a member of the service is that of Sir Joseph Fayrer in 1876, though two other retired members of the service, Sir Alexander Christison and Sir J. J. Trevor Lawrence, have inherited Baronetcies. Only one officer of the service has won the Victoria Cross, Major (then Surgeon-Captain) H. F. Whitchurch at Chitral in 1895, though Major (then Surgeon) J. Crammin, of the Bombay service, had previously won the Cross in Burma in 1889. And as long ago as 1860 a member of the Bengal Subordinate Medical Service, Hospital apprentice J. Fitz Gibbon, earned the Cross for gallantry at the capture of the Taku Forts in the second China war. The first to gain the distinction of F.R.S. was John Fleming in the last century, among others who have obtained the Fellowship of the Royal Society are Horace Hayman Wilson, Sir James Ranald Martin, Sir Joseph Fayrer, J. E. T. Hitchenson and D. D. Cunningham.

In the early part of the century the East India Company kept up no less than seven establishments. That of Bengal was nearly as large as the other six put together. The Madras and Bombay establishments together about equalled Bengal. The other four were the West Coast, the Prince of Wales' Island, the St. Helena, and the Chinese establishments. All were very small. The "West Coast" establishment was that which worked the Dutch East Indies, while they were held by England during the long war with France. It was entirely composed of officers lent from India, chiefly from Bengal, and came to an end in 1825, when the islands were restored to Holland. That of Prince of Wales Island consisted partly of officers lent from Bengal, partly of officers forming a small separate service.

The medical establishment contains the names of only thirteen officers, besides those lent from Bengal. This service was abolished in 1830, the officers then serving being either pensioned or transferred to Bengal. The St Helena establishment disappears from the Army List after 1835. From 1813 to 1835 the medical establishment contains eighteen names, the last to join, Assistant-Surgeon George B. Waddell, was murdered by pirates on 6th April 1830. The China establishment contains the names of only three surgeons, one of whom served all the time from 1813 to 1836, after which this establishment no longer appears in the E. I. Register.

The first native of India to enter the Bengal Medical Service was Surjo Coomar Goodeve Chuckerbutty, on 24th January 1855, the next was Rajendra Chandra Chandra on 27th January 1858. No other native entered until 1st October 1866. In the forty years from 1855 to 1896, in all twenty-three natives of India, or at least twenty-three officers with native names, entered the Bengal Service.

The life of Surgeon-Major John Bowron, who was born in January 1799, entered the service on 20th December 1825, retired on 31st December 1851, and died, aged 100, on 5th March 1899, almost over the whole of the century which has just closed. He drew a pension for forty-seven years. There are instances, however, of officers living for an even longer period than that after retirement, but they were men who had retired or been invalided after a much shorter period of service than Dr. Bowron's, e.g., Assistant-Surgeon William Miller Buchanan, retired 30th July 1839, and died over fifty-three years later, on 1st January 1893. Instances of officers living forty years after retirement are not uncommon. In fact, the chances seem to have been rather in favour of an officer living to a good old age, if he survived the first few years after his retirement.

In looking through the old Army Lists, one is struck with the curious names, or names which seem curious nowadays, of many of the appointments formerly held by medical officers. Among them are the names of many long service dead and gone regiments, e.g., the Local Horse (several regiments), the Kemaon (Kumaon) Local Battalion, Scindia's Contingent, the Calcutta Native Militia, the Bhagulpur Hill Rangers, the Ramghur Battalion, the Jodhpur Legion, the Kotah Contingent, the Aracan Local Battalion, the Oudh Local Infantry, the Bundelcund Legion, Shah Sujah's Contingent (in the first Afghan war), the Volunteer Corps, two battalions in 1840 were employed in the first China war are shewn as "with Forces Eastward," or "on Service Eastward." There are also the names of civil stations long since abandoned, or whose names have been changed, e.g., civil Ramghur (now Hazaribagh), civil Ramree (Kyukphyu in Aracan), civil Commer-

cally (in the Nadia district), civil Bulloah (in Bhagulpur district), civil Hidgelee (formerly a district in Orissa, now incorporated in the Midnapore district). There were also medical officers at all the salt agencies, Jessore, Tumlook, Hidgelee, Baripore (Baripur in the 24-Parganas), and Civil Surgeons of commercial residences as at Khurpa and Radnagore in the Midnapore district, Haripal in Hughli, Santipur in Nadia, &c. Such appointments also occur, held by medical officers, as "service of Begum Sumroo," "King of Oude's service," "Nizam's service," "Saltpetre and Opium Agent, Patna," "Opium Agent, Behar," "Resident at Singapore," "Benares prisoners." The officer now called medical storekeeper, Calcutta, was formerly known as the apothecary to the company, there was also a Deputy Apothecary. The Civil Surgeoncy of the 24-Parganas appears in the Army List for many years as "Calcutta, Sudder and Mysore Princes."

A good many members of the Bengal Medical Service have formerly served in the Medical Department of Her Majesty's Army. Between 1855 and 1860 several men entered who had served as temporary Assistant Surgeons in the Crimean War. When the service was again thrown open to competition in 1865, after having been closed for five years, six of the men then at Netley on probation for the A. M. D. passed the examination for the I. M. S., three of them being posted to Bengal. Several men have since entered who had served for a short time in the A. M. D., only one officer appears to have done the reverse, and entered the A. M. D. after resigning his commission in the I. M. S. - A few, e.g., D. J. O'Callaghan and E. R. Birch, had previously served in the Navy.

The above notes have been founded partly on Messrs. Dodwell and Miles' list of the Indian Medical Services, partly on a study of the East India Registers from 1813, the earliest which is to be found in the Imperial Library, till 1876, when the publication was dropped. I regret that they are so incomplete, but hope that some time some one else may be able to give fuller details on a subject which should be full of interest to all members of the service, but of which few know much. For myself, I have learned enough only to know my own ignorance.

MOSQUITOES AND MALARIA IN NAGPUR

By ANDREW BUCHANAN, M.D.,

MAJOR, I. M. S.

Superintendent, Central Jail, Nagpur, C. P.

AT the request of the Editor of the *Indian Medical Gazette* I give a short account of some observations which have been carried on recently in regard to mosquitoes. As so much has already been written on the subject, no attempt will be

made at giving a complete or connected account of the life history of the different mosquitoes, but an endeavour will be made to indicate, as briefly as possible, how far the observations which have been made here tally with or differ from those which are recorded in Christy's extremely interesting and most valuable book, in the equally interesting and valuable report which has recently been issued by the Liverpool School of Tropical Medicine, and in the last edition of Professor Celli's book on Malaria. The observations were carried on in and around the Central Jail, Nagpur. In the month of October there were a large number of admissions for malarial fever, and an attempt was made to see whether the anopheles mosquitoes were to be found in larger numbers while fever was more prevalent. There has recently appeared in the columns of the *Pioneer* a correspondence regarding the time of the year when mosquitoes are most prevalent, and the question was raised whether the season for anopheles tallies with the season for culex. My observations have not been carried on for a sufficient length of time to enable me to answer this question, but perhaps if they are published now they may be the means of inducing some others to carry out similar observations, and it is only after observations have been made at a large number of stations that a definite answer can be arrived at.

Relation between malaria and rainfall—I shall give the average monthly rainfall for 10 years (omitting decimals) and the average number of admissions for ague for the same period—

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Rain	0	0	0	0	0	7	14	12	9	1	0	0
Admissions	31	27	28	12	15	14	31	38	56	56	50	37

At page 5 of the West African Report it is shown that the largest number of admissions for malarial fevers occur in the middle of the rainy season. Here the admission rate is greatest after the rains.

Seasonal prevalence of malaria—Celli gives the figures showing the number of admissions for malarial fevers in the hospitals of Rome for thirteen years. If we omit the units and tens, and put down the even hundreds the figures are as follows for each month—

46 37 99 39 35 25 88 176 152 127 95 66

In Rome the maximum is generally attained in August. In Nagpur it is later, in September or October. In Rome from November till June there is a general tendency to a diminution of the number of admissions, and the similarity in the Nagpur figures is remarkable.

Relation of number of anopheles to number of cases of ague—The number of anopheles caught every week within a certain area, viz, the Jail Hospital, is given below, and the

number of cases admitted for ague is also given—

Month	Week.	Weekly total of admissions for Fever	Weekly total of Anopheles caught.
Oct 1900	1st	37	
"	2nd	20	
"	3rd	32	
"	4th	16	117
Total		105	117
November 1900	1st	10	38
"	2nd	6	62
"	3rd	9	19
"	4th	9	20
Total		34	139

I regret that no record of the number of anopheles caught in the early part of October was kept, but I think I may say that the number of admissions decreased *pari passu* with the number of anopheles.

Position of anopheles on wall—The literature on this point is considerable (See *B M Journal*, October 20th, 1900, and for November 3rd, 1900) Ross (page 15, West African Report) says the axis of the body is almost vertical to the wall. Manson says it assumes a position more or less at right angles to the surface. Christy (page 34) says they point *upwards* at an angle of 45 or 50. Of course different kinds may take up different positions, but although I have watched those that we catch here daily I have never seen them adopt the vertical position except once when a male suspended himself vertically from the netting cover of a glass. They generally sit with their bodies sloping away from the wall at an angle of 45 to 60°, but here is a female before me that has been caught to-day, she has had a full meal of blood, and she is sitting with her body at a much smaller angle with the wall.*

Anopheles fragile—Christy says the anopheles is fragile. We find it much more difficult to keep the anopheles alive for any length of time, even when water and bananas are supplied.

Culex and anopheles—The comparison given by Christy at page 45 is an extremely good one, and tallies in nearly detail with what has been observed here. The palpi in the male culex found here are longer than the proboscis, are feathered, and are near the ends curved back like the horns of a goat. The palpi in male anopheles are clubbed, Christy says, but adds a query "the anopheles is mute." I had some anopheles in a glass, and they distinctly made a buzzing sound. Captain French, R.A.M.C., heard these and said, "it is like a band," so the commonly expressed opinion in regard to the silence of the anopheles is not correct as far as the species which is found here is concerned.

* See article by Lieut Col. Giles, I.M.S., in December *J M G*, p 463—Ed., *J M G*.

Christy also says, but adds a query, that the bite of the anopheles is painless. We have allowed the anopheles to bite several men who volunteered, and they say that the bite is distinctly painful. I have examined the places bitten, and small inflamed points were distinctly visible. Only the females of both kinds could be induced to take a meal of blood.

Mosquito curtains—At first we kept our anopheles in a cage made with curtain which had a large mesh. The anopheles readily escaped from this cage. Since curtain with a fine mesh has been substituted they have not escaped. The common culex did not escape from cages made with curtain of the coarsest mesh.

Celli says the culex lays eggs which have the shape of a boat or a raft. The words following show that he means that it is the collection of eggs that form the boat, but the first words may mislead. We have kept a record of the number of culex eggs collected daily for some time, and from one little "tanka" (a small masonry tank), we collect daily about 2 lakhs (2,00,000). In each boat there are about 250 eggs (Christy says 100 or more. Celli says 200 or more). It is a curious thing that although there are several other similar tanks and some large pools of water there are very few eggs found in these. The water in their favourite tank runs from the hospital cook-house, and the water used for washing rice runs into it. The water is stagnant and putrid, and this agrees with Celli's observations. In fact the more putrid the more attractive, for this tank was cleaned out one day, and on the next morning only about half the usual number of eggs were found. Those who advocate the application of kerosene oil to such pools will wonder why we have not put oil on this pool, but I shall, I think, be able to give a good reason later on when we are considering the method of destroying mosquitoes. The eggs are generally laid during the night or in the early morning. They are greyish white when freshly laid, but soon turn dark in colour. Sometimes the culex will lay her eggs in one of the glasses in which the larvae are kept.

Ova of anopheles—In the Liverpool Report it is stated that the anopheles eggs are boat-shaped like those observed in India (page 19). Christy says they are "tiny black rod-shaped eggs." If we examine them as they float on the water they are seen to be slightly pointed fore and aft, and they seem straight, but when placed on a glass it will be seen that many of them appear slightly curved. I compared them to a caraway seed, and Captain French was of opinion that they are more like a caraway seed than anything else he could think of. Those that appear to be curved are probably lying on their side. The anopheles eggs are darker in colour than the eggs of the culex.

Anopheles pools—Christy says the anopheles never select sewage or foul water as the culex does, and Celli says they generally select clear spring water where there are few or no eggs or larvae of the culex. These observations practically tally with what has been observed here. The favourite place for the anopheles is a small collection of clear water which comes from one of the subsoil drains, and no sewage or washings can get into it. There is a small "tanka" with comparatively clean water, and in it both kinds are found.

LARVÆ

Manson says the larvae of culex hang vertically downwards. They generally hang obliquely. There is one kind that we frequently see here which lies at only a very acute angle under the surface. This particular species we call the "black necks," because they have a black ring behind the head. They seem to be more "cannibal" than most other larvae and frequently eat up their nearest relations. They are rather like the anopheles larvae, but the latter have black heads "like a cobra" as our collectors expressed it.

NYMPHÆ

The nymphæ, Celli says, have more need of air than the larvae, and this tallies with what has been noticed here.

Time to develop—Celli says in favourable season the whole cycle is completed in 30 to 32 days. Christy says the larvae reach their full size in from 8 to 20 days. The time taken by the culex which we have recently watched is as follows. The eggs are hatched within 24 hours. The larvae turn into nymphæ on the 10th day, the nymphæ become fully developed mosquitoes three days later. As the weather is getting colder, however, they seem to develop more slowly. This is in accordance with Ross's observations.

DESTRUCTION OF MOSQUITOES

We are usually recommended to apply kerosene oil or some such substance to the breeding pools. If we want to get rid of a man-eating tiger there are two possible ways in which it might be done—one, if we drive out from a particular district all the animals on which the tiger can feed, and the other by tying up a "kill." The "shikari" who would attempt the first method would be laughed at, and I think the man who would attempt to get rid of mosquitoes by trying to oil all the pools would be acting just as foolishly, for such a thing would be impossible in most stations. When we find out where the breeding pools are it is better to preserve them as much as possible and then collect the eggs—a very easy matter in the case of culex—or the larvae or nymphæ in the case of anopheles. It takes 14 days here before the mosquito is

developed, and there is plenty of time in which the nymphæ or larvæ can be caught. The larvæ and nymphæ are very active, and when the water is touched they rush to the bottom of the pool, but with a sieve made from a piece of muslin spread on a wooden framework, it is after a little practice easy to catch them.

I have ventured to differ in one or two points from the authors of the Liverpool Report, from Christy, and from Celli. I may of course be describing a different variety of mosquito, but let me add that what strikes me forcibly is the marvellous accuracy and completeness of the numerous observations recorded in these three works, and although I have noted one or two points in which their observations do not tally with what we have seen here, still there are hundreds of their observations which have been verified here, but there is a limit to an Editor's patience, and the repetition of facts which have been so well and carefully recorded in these works would be trespassing too far on that patience. I would advise those who have not a copy of the works referred to to get them without delay.

Several anopheles which were fed on the blood of a man suffering from ague have been allowed to bite healthy individuals. The results will be communicated later. Up to date only one of those bitten has been attacked by fever.

CAPTAIN ROGERS' RECENT INVESTIGATIONS IN MALARIA

BY G. M. GILES, F.R.C.S.

LIEUT. COL., I.M.S.

I HAVE read with interest the discussion in the *Indian Medical Gazette* on the above subject and, in connection therewith, desire to draw the attention of your readers in general, and of Captain Rogers in particular, to a table published at p. 30 of the current report of the Sanitary Commissioner, North-Western Provinces and Oudh, showing the death-rates in certain places before and after the introduction of modern water-supplies and drainage.

This table has been published annually for several years, and they are necessarily readily accessible to all officers of the Sanitary Department in all provinces, so that it is the more difficult to understand how Captain Rogers could be led to base so wide a generalization on his observations without being at the pains to ascertain what alterations of mortality had elsewhere followed the introduction of a piped and filtered water-supply, for it is impossible to imagine that any diminution in malarial fevers and splenic enlargement could fail to show itself in a diminution of the general death-rate.

For the benefit of those to whom the above reports may not be readily accessible, the figures bearing on the question are extracted below —

Town	Average annual death rate since introduction of a filtered water supply	Average annual death rate for the five years' period preceding its introduction	Remarks
Cawnpore	47.83	41.15	I extract here only the data as to towns provided with a filtered supply, places supplied with unfiltered water have been excluded, as also have cantonments and hill stations.
Allahabad	28.70	25.77	
Lucknow	43.79	44.68	
Bonares	48.81	39.99	
Meerut	35.06	32.13	
Agra	35.46	32.23	

The addition of this table to the Sanitary Reports was probably initiated with the view of illustrating the benefits conferred by modern sanitation, but, if this be the case, the compilers must have been most disagreeably surprised, for with hardly an exception a rise, and not a fall, of mortality has followed. There are, of course, absolutely no statistics extant of any value whatever as to the absolute number of deaths referable to malaria in any Indian town, but Captain Rogers will not, I presume, be disposed to dispute that the disease is everywhere in India, accountable for a considerable proportion of the total mortality, or that any perceptible improvement in the prevalence of malaria could fail to make itself evident in the total death-rate.

It is inconceivable that the introduction of a pure water-supply should raise the death-rate from cholera and bowel-complaints and, as a matter of fact, the figures of such of the towns as I have looked up, show improvement in this respect.

Nor can the enhancement of the death-rate be fairly ascribed to improved registration, as during the entire period this has been admittedly fairly accurate as to total mortality, however worthless it may be as to detailed causes, nor is there any evidence to show that there has been any general improvement in this respect. Moreover it must be remembered that the dates of introduction of a regular water-supply differ widely in different places, and that the increased mortality has followed immediately in by far the majority of cases. Further, the increase though immediate is not progressive, as may be seen by running through the series of tables published up to the present date.

It is therefore undeniable that, in these provinces at least, municipal malaria has in-

creased and not diminished coincidently with the introduction of filtered water-supplies

For those who believe in the agency of the mosquito in the propagation of malaria, the explanation of this unexpected and undesired result of modern sanitary enterprise is not difficult

In by far the majority of cases no attempt at improved surface drainage has accompanied the spread of the waterpipe

Financial tightness has necessitated that the essentials of sanitary reform should be taken in hand one by one, and the effort to introduce a pure water-supply has so exhausted the resources of each municipality in which it has been carried out, that the proportion of cases in which the engineers have been able to so place their hydrants as to secure a ready flowing away of waste water has been perforce a very small one, and the result has been that, in by far the majority of cases, each hydrant is the source of a string of puddles of constantly renewed, fresh cool water, and not unfrequently so placed, as to be for the greater part of the day in the shadow of tall buildings. In pools so fed and situated, anopheles larvæ may be found at times of the year when, but for the hydrants, they would be as rare as the dodo, for these larvæ do not appear to be able to develop in water as hot as that of the ordinary stagnant pool or tank in the hot dry weather. At any rate it is only in such exceptionally conditioned water that *anopheles* larvæ can be found in these provinces in March and April, for the ordinary garden tanks which in the rains will harbour large numbers are then full of culex larvæ only. In this way, a piped water-supply extends the period of possible infections over several months which ordinarily can yield but few fresh cases

As even when confined to its normal times and seasons, malaria is responsible for a larger share of the total mortality than any other disease, the above explanation appears to me to adequately explain the apparent failure of pure water-supplies to improve the general health

It is obvious however that the increased sickness and therefore presumably malariousness of these places are an indirect result only of the introduction of a water-supply, as to the direct connection of which with malaria there exists no tittle of proof

In employing the proportion of persons found to have enlarged spleens as a measure of the malariousness of places, Captain Rogers probably assumed that the causal connection between malaria and chronic enlargement of the spleen was undoubted and undeniable, and it may be freely admitted that the geographical distributions of the two diseases, as a rule, coincide, but this coincidence is, I am convinced, less close than is generally supposed, and, in any case, is, taken alone, insufficient to

prove that the one is a sequel of the other. Apart from this it will, I think, puzzle Captain Rogers to advance any anatomical evidence to shew that the chronic enlargements of the spleen is the work of the malarial parasite. Personally I rather incline to the belief that there is some direct or indirect causal connection, but it certainly cannot be considered as proved, and therefore the employment of an enlarged spleen ratio as a measure of malariousness is quite inadmissible, but apart from this, it is so impossible to ensure that the individuals observed are really representative of the population that the compilation of such statistics is mere waste of labour, which at the best can only confuse the issues under consideration, and I trust I shall not be considered "fatherly" in pointing out that the establishment of a single anatomical or biological fact would be more valuable than an indefinite amount of enumeration whether of spleens or of blood corpuscles

P S—It may be well to note that I have no desire to discredit Captain Rogers' observations as to the prevalence of anopheles larvæ near Calcutta in the hot weather. The climatic conditions differ entirely from those of these provinces. It is to be regretted however that he has given us no information as to the prevalence of the perfect insects, as the presence of larvæ by no means necessarily indicates the coincident presence of the imagoes, for the reason that when climatic conditions are unfavourable to pupation the larvæ are certainly capable of living for months unchanged

THE ROMANOWSKY STAIN FOR DEMONSTRATING THE TERTIAN MALARIAL PARASITE

By J CHAYTOR WHITE, M.D.,
CAPTAIN, I.N.S.

(From the Netley Pathological Laboratory)

By the Romanowsky method of staining, which has only lately been introduced, the demonstration of the common tertian malarial parasite becomes a simple matter. The method demonstrates primarily the corpuscle in which the plasmodium is situated, and secondly makes the parasite itself more apparent

Schuffner lately described in an article how a peculiar dotting occurs in the host cell (blood corpuscle) inhabited by the tertian malarial hæmaphysa, when the blood film is stained in a certain manner, and this dotting is so remarkable a phenomenon, that it reduces the discovery of the plasmodium in a film from a laborious examination to the simplest of procedures

Maucler has lately shown (*Centralblatt für Bact.*, August, 1900) that not only was the Romanowsky stain made unnecessarily difficult, but that the limitations of the stain were not

reached by the discoverer whose name it now bears. He simplifies matters by using very dilute solutions and by staining for longer periods than had hitherto been employed, and his results are of the highest value in microscopical work.

Nocht first described how a red stain is obtainable with certain varieties of methyl blue (red from methyl blue), but it is not until the methyl blue becomes mixed with eosin that the red stain becomes effective. The red colour is not imparted by the eosin, as one might suppose, but by the methyl blue which contains the red and can only be induced to part with it when mixed with eosin in certain definite proportions. The actual part the eosin plays is not known, but we may accept the fact that eosin causes the "roth aus methylblau" to become effective. There are four stages of Romanowsky's stain defined by Maurer, which will be described later. It cannot be too strongly impressed, that to obtain good films, cover-glasses and slips should be scrupulously cleaned by absolute alcohol. The blood film should be taken on the cover-glass in the usual manner by means of a piece of cigarette paper or a glass rod. They should not be kept, but fixed at once by pouring on absolute alcohol, which is dried off by blotting paper or evaporation.

Methyl blue and eosin are the two stains used, and when the solutions are made up they are put into separate glass bottles. Not every variety of methyl blue gives up the red—the essential part of the stain. Two varieties contain it and can be induced to part with it—medicinal methyl blue (Hochst) and anilin blue (Merck).

A solution (methyl blue) consists of—1% methyl blue + 5% soda carbonate + 25% formalin. This is kept for a week before using.

B solution (eosin). There are three sorts of eosin that can be used, Eosin 1, E 11 or E 111 (Giubler's). A 1 in 1,000 solution is prepared and to obtain the proper staining results it has been found experimentally that—1 pt of methyl blue requires 5 pt of 1 in 1,000 E 1, 1 pt of methyl blue requires 10 to 20 pt of 1 in 1,000 E 11, 1 pt of methyl blue requires equal pts of 1 in 1,000 E 111.

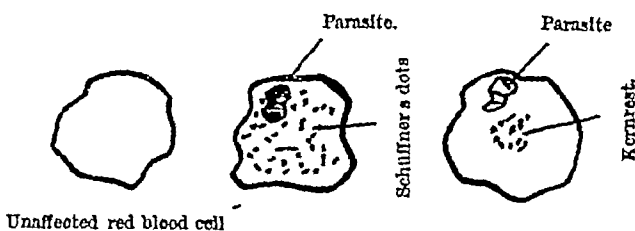
Having made up your two solutions and placed them in separate stock bottles where they will keep good for a long time, take 15 drops (1cc) of the methyl blue solution and mix it in a beaker with $6\frac{1}{4}$ drachms (25cc.) of water. In a second beaker 15 drops of eosin solution and $6\frac{1}{4}$ drachms of water are mixed and the two solutions kept separate. Equal quantities of these two very dilute solutions are now mixed in a watch-glass, and the film floated on at the moment of mixing. The mixture should be agitated with the film held in a forceps and the film should be placed in the mixture the moment the two are in conjunction. After staining, dry thoroughly.

and mount in Canada balsam, a medium that unfortunately effects the finer characters of the stain so that preparations deteriorate with keeping. The first stage of staining is reached after ten minutes in the fluid. The red blood corpuscles are pale green in colour, the nuclei of the leucocytes blue, with the protoplasm colourless or later studded with fine points. The body of the parasite light-blue.

The second stage is reached after twenty minutes, nuclei of all white, blood corpuscles deep red turning violet, protoplasm filled with red spots. Body of lymphocytes (large mononuclear) beautifully stained. Parasite reddish violet or red.

Third stage reached in from half to one hour. Schuffner's dots appear in the corpuscles occupied by parasites, and are seen scattered all over the cell. The larger the parasite and its host cell grow, the larger become the dots. They fill the whole cell and are dotted all over the parasite. The appearances cannot be mistaken for eosinophile cells, as these are stained a dirty blue tint. The whole appearance of the cells containing the parasite are so remarkable, through the deep-red dotting, that the parasite-containing cell can be made out with a $\frac{1}{2}$ " power.

Fourth stage appears generally later than the above—the so called "Kernrest" or "nuclear remains" stage. In this stage there appear deeply stained fine and coarse granules in the concavity of the red cell, the cell appearing to have a nucleus. This appearance comes on later than Schuffner's dots and is distinct from it, the parasite often being seen at one edge of the corpuscle, the dots being all collected in the middle. During the last stages a time occurs



when the two stains exactly neutralise one another the staining cannot become deeper and thereafter damage occurs by keeping the films longer in the stain.

In spite of the great simplicity of the procedure, proper staining is not always attained. As noticed above, it is better to put the film in the solutions the moment they are mixed, and Maurer found that as a rule the best results are obtained after about half an hour's staining, when the red cells appear pale-green and the mono and polynuclear leucocytes shew a ruby red nucleus. The nucleolus of the tertian spore is generally well seen, and frequently a single spore can be observed having just penetrated a corpuscle. The rosettes are usually beautifully stained, and in short all the characteristic forms of the tertian plasmodium are unmistakably

evident In specimens of the quartan and malignant types no dotting of the host-cell is seen, the parasite, however, is quite evident What the dots actually are and what their cause is, is not known Schuffner believes them to be either a product, a separated or an effete portion of the parasite, but Maurer maintains these theories are untenable since the dots do not increase in number, but only in size during the growth of the cell and parasite Moreover broken off and effete portions of the parasite are elsewhere coloured blue, and he thinks the dotting is more probably due to changes in the protoplasm of the cell Schuffner's dots have at all events nothing at all to do with the "Keimrest" stage, for here usually the parasite lies in a clear space quite at the side, while the dots are seen in the centre of the cell

In India the stain from its simplicity should be of great assistance in facilitating diagnoses or in saving the laborious microscopical searching of many fields of unstained blood cells The dyes should be obtainable at any good chemists for a few annas

THE BODY TEMPERATURE OF THE GOORKHA*

CONSIDERED IN CONVECTION WITH A
PREDISPOSITION TO PULMONARY
PHTHISIS

BY N P O'G LALOR, M B B OH,
CAPTAIN, I M S

I THINK it is admitted that the normal temperature of the Gorkha Sepoy is lower than that of the European, and lower than that of most of the other native tribes inhabiting this country

The explanation of this phenomenon ought to be, one would say, a physiological one, attaching the blame to this or that system or function of the body or its parts

After two months' experience as medical officer of the 43rd Gorkha Rifles, I had satisfied myself that this abnormality of temperature did actually exist in the Gorkha, and I had the good fortune to assure myself of the general truth of this observation by personal reference to a medical officer who had been for some years in medical charge of a Gorkha regiment

In searching for an explanation physiological considerations at once suggested that an abnormally low body temperature in health must be connected with an abnormality of general tissue metabolism, and especially of muscular

metabolism, the great constant source of animal heat

According to this idea the abnormally low body temperature of the Gorkha would be due especially to an abnormality of muscular metabolism

Now dextrose forms a distinct and important food of muscle Considerations which lead to this conclusion are —1 If artificial circulation be kept up through a living muscle, and dextrose introduced on the arterial side, this dextrose will be found to be almost absent on the venous side (having, therefore, in the course of its circulation, been selected and absorbed by the muscle) 2 If the amount of muscular work done by an individual be measured by a reliable standard, it will be found to be greater when he is taking a diet containing sugar than when he is taking a diet containing none The following consideration now presented itself If there be in the Gorkha an abnormality in muscular metabolism, and if it be owing to this that his body temperature is abnormally low, then by administering a fair amount of sugar (a distinct and important food of muscle) to him in his diet, one should be able to raise his body temperature to a level approximating to that which is normal in the European

With the idea of submitting this theory to a practical test, I asked that six healthy Gorkhas of the detachment of the 44th Gorkhas at Shillong might be placed at my disposal, and this request was very kindly acceded to by the officer in command of the detachment

The temperatures of these six men were carefully registered morning and evening for eleven days, during the course of which they were ordered to abstain from sugar This first period was followed by a second of equal duration, during which their temperatures were taken morning and evening as before, but during this period they each received daily about six ounces of country sweets, which they consumed in my presence This second period was followed by a third of the same length, during which each man's temperature was registered twice daily as before, but the consumption of sugar entirely stopped

Thus there were three periods in the experiment, each lasting eleven days During the first, no sugar was administered, during the second, sugar was administered to the extent of about six ounces daily, during the third, the administration of sugar was stopped The result for all was an average temperature of 97.1°F for the first period, of 97.4°F for the second period, and of 97.2°F for the third period Not only this, but in each individual case the average temperature showed a rise while sugar was being administered, and a fall when the administration was stopped

* See note on same subject by Lieut Col H Hamilton, I M S, in *Indian Medical Gazette* for 1900, p 136 —Ed, I M G

I had, previous to the experiment, satisfied myself by reference to the men's Medical History Sheets that their health was good. The thermometers employed in the registration of temperature were reliable, temperature was taken in each case in the axilla, and the thermometer left in for a full five minutes on each occasion. The coincidence and identity of the result secure the experiment, as far as I can judge, from fallacy.

I had now arrived at this stage, stated concisely—

1 There is a constitutional abnormality in the healthy Goorkha, of which his abnormally low body temperature is the expression.

2 This constitutional abnormality is due to an abnormality of metabolism, and most probably of muscular metabolism since—

(a) Physiological considerations support the statement

(b) The daily administration of sugar to six healthy individual Goorkhas in their diet, diminished in all the amount of abnormality previously found to have existed.

I now turn to the consideration of pulmonary phthisis, in so far as it affects the Goorkha. Amongst men of the 43rd Goorkhas there seemed to me to be an undue prevalence of pulmonary phthisis. I remember to have treated at least eight cases of the disease in hospital during the four months of my incumbency. Again by reference to my senior, I was able to assure myself of the correctness of the above surmise, further strengthened by reference to the hospital records of the regiment for previous years. I made a tabular extract from previous annual returns, and this extract is appended below. It will be seen that bronchitis, acute lobar pneumonia, and acute pleurisy have been included in the table, so that there might appear that absence of relation which exists between these different pulmonary diseases as regards the number of annual admissions for which each is responsible.

STATION	FOR	ACUTE BRONCHITIS		ACUTE LOBAR PNEUMONIA		ACUTE PLEURISY		PULMONARY PHTHISIS	
		CASES	DEATHS	CASES	DEATHS	CASES	DEATHS	CASES	DEATHS
Head Quarters at Kohima Detachment at Manipur	1895	32	NIL	8	1	2	NIL	9	2
Do	1896	23	NIL	11	3	6	NIL	7	3
Do	1897	22	NIL	13	NIL	8	NIL	5	4
Do	1898	50	NIL	29	3	1	NIL	6	1

I think it will be obvious that not much relation could be said to have subsisted between acute lobar pneumonia and pulmonary phthisis, when one finds the number of admissions for each to have been respectively 8 and 9 in the year 1895, and 29 and 6 in the year 1898.

Bronchitis might be considered as especially a disease brought on by chill, and when the number of annual admissions for this disease are examined, it will be seen that it prevailed habitually amongst the men of the regiment to an unusual extent. Yet again there is an absence of correspondence between the number of admissions for bronchitis and the number of admissions for pulmonary phthisis.

This, it appears to me, at all events clears the ground to the extent necessary to enable one to exclude exposure to chill with its ultimate consequences, as a satisfactory explanation of the prevalence of pulmonary phthisis amongst the men of this regiment. The explanation seemed to lie in some abnormality of system or function in the Goorkha which involved predisposition to tubercular disease of the lung.

In pulmonary phthisis wasting is a prominent clinical feature, and this wasting applies to muscle as well as to fat. The fat of the human body forms a reserve store of energy for the body at large. When it is required for any purpose in the animal economy it has to re-enter the circulation, and this it cannot do in the form of fat. Foster considers that it re-enters the circulation in the form of sugar, and that it is carried in the form of sugar to the tissue or organ requiring the nourishment it supplies. Sugar we have seen to be a distinct and important food of muscle, and if it be administered in the diet of a consumptive patient, it ought not only to act in that capacity, but ought also to lessen the waste of the body's store of fat by satisfying the needs of those tissues or organs, which in its absence would draw upon the body's store of fat for their needs.

There would appear then to be a distinct need for sugar on the part of the animal economy, in the case of a patient suffering from pulmonary phthisis.

There is a disease with which we are well acquainted, *viz*, diabetes mellitus, in which, were the sufferer also attacked by pulmonary phthisis, the need I have mentioned could not be satisfied, inasmuch as from the nature of the case, the sugar available for the needs of the economy is constantly leaking out more or less rapidly through the kidneys. We should then expect to find in cases of diabetes mellitus a peculiar predisposition to pulmonary phthisis, and we should further expect pulmonary phthisis in such cases to pursue a very rapid course. As a matter of fact both of these presumptions are clinically true.

It will now conduce to clearness to sum up the considerations upon which we have been dwelling —

- I a The Goorkha has an abnormally low body temperature
- b This is most probably due to an abnormality of muscular metabolism
- c The abnormality can be reduced by the administration of sugar, which is a distinct and important food of muscle
- II a The Goorkha is predisposed constitutionally to pulmonary phthisis
- b In pulmonary phthisis muscular and fatty wasting are prominent clinical features
- c As far as pulmonary phthisis is concerned muscular and fatty waste may be considered together, inasmuch as one involves the other
- d In pulmonary phthisis there would seem to be a distinct need for sugar to repair muscular and fatty waste

The case then stands in this way —

- I Individuals of a certain race exhibit two defined characteristics
 - 1 A constitutional abnormality in health
 - 2 A constitutional tendency to a specific disease
- II There is a dietetic substance which, administered to such individuals in moderate amount, tends to correct the constitutional abnormality
- III This dietetic substance seems to be specially called for as an adjunct to treatment, in cases of the specific disease

In such a case as this, I think the inference is that there exists a relation between constitutional abnormality on the one hand, and predisposition to disease on the other, as far as the individual is concerned

If these arguments be correct, the continued administration of sugar should be a constitutional prophylactic against pulmonary phthisis not only in the case of the Goorkha, but also in the case of predisposed individuals generally, and the administration of a dietary containing a large amount of sugar should be a valuable adjunct to the treatment of most cases of tubercle of the lung itself at all events in the early stages of the disease when the digestive powers are still active. I hope later on to be able to add a further contribution concerning the subject of this investigation

A Mirror of Hospital Practice.

NOTES ON EIGHT CASES OF OVARY HYSTERECTOMY (PORRO'S OPERATION) PERFORMED IN THE ISHWARI MEMORIAL HOSPITAL, BENARES, DURING THE LAST FIVE YEARS

By T H SWEENEY,
LIEUT COLONEL, I M S,
Civil Surgeon, Benares

HAVING in view the great prevalence of extreme pelvic distortion among females in India, in part the result of rickets, but more commonly the result of osteomalacia, the necessity for more frequent resort to the operation of ovario-hysterectomy seems to me to be urgently needed. The dangers of this operation are, I believe, over-estimated, and the following notes of eight cases performed by me in the Ishwari Memorial Hospital since 1896, in which six mothers and the eight children were saved may prove of interest. In a country in which seclusion of females is carried out to such an extent, it is obvious that the ordinary rules regulating remedial measures in child-birth cannot be followed, and "induction of premature labor" and "turning" are in consequence seldom possible, while in most cases in which the forceps could be applied the child is, as a rule, dead before recourse to hospital is effected. We are, therefore, in cases of great distortion reduced to the consideration of simple Cæsarean section, its modification ovario-hysterectomy or Porro's operation, laparo-elytiotomy or Thomas' operation and symphysiotomy. Simple Cæsarean section is, outside the larger towns, an operation which should seldom be attempted, as, while fully weighing its one obviously great advantage, yet this advantage is more than counterbalanced by, firstly, its relatively greater danger than Porro's operation, and secondly, the danger of necessity for resort, on future occasions to a similar measure when, perhaps, for various reasons such operation may not be undertaken.

Laparo-elytiotomy or Thomas' operation is one I have no fancy for as it is more difficult than Porro, has not up to the present been as successful, and like simple Cæsarean section may require repetition in any future pregnancy. We have remaining symphysiotomy which should be tried in all cases of lesser distortion in which a living child may be extracted through the natural passage, and lastly, the operation under consideration by which both mother and child can be saved and the mother preserved from future similar trouble. Muller's modification of the original Porro has the great advantage in that hæmorrhage can be so easily controlled and

the peritoneal cavity kept free from the entrance of blood and amniotic fluid, &c, this much more than counterbalances the longer incision in the abdominal walls and was the operation carried out in the eight cases described

CASE I Musst Sumaria, Musahirin, aged 30 years, Porro Muller performed on May 6th, 1896—*Rachitic pelvis*

History—A blind rachitic dwarf with almost every bone in her body distorted—first pregnancy—very extreme pelvic distortion Operation performed at 9 A M on 6th May 1896, and a living child removed The mother died suddenly next day, but whether from syncope or embolism, it is difficult to say, as no *post mortem* examination was allowed The child progressed favourably

CASE II Musst Bunnoo, Mussulmanin, aged 22 years Porro-Muller performed on August 30th, 1896—*Osteomalacic pelvis*

History—First child removed by embryotomy nine years ago, no pregnancy since then until this one, and such extreme pelvic distortion that even embryotomy would not now be possible Operation performed on 30th August 1896, and a living child removed Recovery was uninterrupted, and both mother and child left hospital on October 4th

CASE III Musst Asa, Mussulmanin, aged 30 years Porro-Muller performed on February 28th, 1898—*Osteomalacic pelvis*

History—Has had two children aged ten years and eight years Has brought to hospital specially to have this operation performed, as great pelvic distortion was diagnosed in a Mission hospital where she had been under treatment for four months for lameness as she describes it, but which was really osteomalacia Operation was performed on February 28th, and a living child removed, and both mother and child left hospital in perfect health on March 30th

CASE IV Musst Senputti, Telin, aged 24 years Porro Muller performed on March 27th, 1899—*Rachitic pelvis*

History—Had to have her first and second children delivered by craniotomy, and was advised to have Porro performed in case she became again pregnant On this her third pregnancy she came to hospital when labor had commenced, and it was found on examination that, in addition to the great pelvic distortion, a thick cicatricial band had formed across the vagina which almost completely closed that passage While preparations for the operation were being made, violent labor pains set in, and the uterus ruptured The operation was at once commenced, and a living child removed, but owing to her collapsed state, the operation could not be satisfactorily completed After removal of the uterus and ovaries, the abdominal cavity was thoroughly flushed out with warm water and all meconium, amniotic fluid, &c, removed as far as possible, but the rent in the uterus which extended right down through the lower uterine segment could not be completely stitched up, and we had to content ourselves with plugging the vagina with iodoform gauze As might be expected peritonitis set in, and she died on April 5th

CASE V Musst Rahmat, Mussulmanin, aged 25 years Porro Muller performed on May 14th, 1900—*Rachitic pelvis*

History—First child extracted dead by forceps four years ago, second child, craniotomy, three years ago When five months' pregnant with her third child she came to hospital and asked that when her time should come we would cut the abdomen and remove both womb and child as was done to a friend of hers by me four years ago She was admitted to hospital just when labor was commencing, Porro Muller's operation was performed, and a living child removed, and both mother and child left hospital in perfect health on June 6th

CASE VI Musst Bhooti, Kaisthin, aged 34 years Porro Muller performed on May 28th, 1900—*Osteomalacic pelvis*

History—First child born naturally seventeen years ago Since then no conception until present one Had been 36 hours in labor before Miss Harman was called in Miss Harman recognising extreme distortion explained what was required, and the patient and friends consenting, she was brought to hospital, and Porro Muller performed, and a living child removed, and both mother and child left hospital on July 1st, in perfect health

CASE VII Musst Herri, Kunjarin, aged 40 years Porro Muller performed on June 13th, 1900—*Osteomalacic pelvis*

History—First four children born alive, fifth and sixth born dead at full term Seventh born dead at seventh month, eighth miscarriage at four months Ninth born dead at full term Was brought to the hospital for her tenth confinement on June 13th, after having been two days in labor In her case there was little doubt as to the nature of the operation required as, in addition to very extreme pelvic deformity, both thighs were flexed on the abdomen and ankylosed in this position, and very great difficulty was experienced in performing the operation However, a living child was extracted, and mother and child left hospital on July 6th, both being in perfect health

CASE VIII Musst Butchi, Ghutia Brahmin, aged 20 years Porro Muller performed on December 5th, 1900—*Rachitic pelvis*

History—This girl was admitted for her first confinement on December 5th, after having been 48 hours in labor A typical rachitic dwarf with the tibia and fibula on both sides much distorted, and a conjugate diameter which seemed to be under 2 inches Porro Muller was performed with the consent of herself and her friends, and a living child born In her case the temperature never rose beyond 99° The incision in this case was right through the placenta, and the rubber tubing had to be tightened, and some difficulty was experienced in reviving the child, but I am glad to say both mother and child are doing splendidly The mother is now sitting up and nursing her infant, and will leave hospital in a few days (Since these notes were written both mother and child have left hospital in perfect health)

In all these cases strict aseptic precautions were taken, when necessary the waters were ruptured through the vagina and catheter passed to empty the bladder An incision about 5 inches long was then made through the abdominal walls and the uterus exposed, this incision was enlarged up and down with a strong scissors until the uterus, tilted on its side, could be lifted out A thick rubber tubing was passed loosely round the lower segment of the uterus below the child's head, and a special assistant told off to tighten this should hæmorrhage be severe Another assistant was told off to prevent extrusion of omentum and intestines by placing a hand on each side of the abdominal walls and following up the uterus as it was lifted out Muslin sponges were then packed all round the uterus, and an incision rapidly made through it and the child extracted The rubber tubing was then tightened (if this be done quickly it is astonishing how little blood is lost even when the incision is through the placenta) The muslin sponges prevent the entrance of all blood, &c, into the peritoneal

cavity—the placenta and membranes were then removed, the rubber tubing being loosened, if necessary, to allow of this being thoroughly done, and two large and long steel knitting needles passed at angles through the uterus, and a thick silk or whipcord ligature tied very tightly below the needles. The uterus and ovaries were then cut off about half an inch above the needles (the pedicle should not be made too short otherwise great dragging takes place as contraction occurs). In addition to the main ligature round the uterus, the uterine vessels were also tied separately in the stumps otherwise troublesome oozing may come on. This oozing could, of course, be avoided by using the *serre-neud* instead of the ligature, but we had not this instrument available. We now come to what may be termed the toilet of the stump, which is one of the most important parts of the operation. The peritoneal covering of the stump below the ligature should be most carefully stitched to the parietal layer of peritoneum so as to completely close off the peritoneal cavity, and the sutures employed in closing the incision just above and below the stump may be utilized to help in doing this. When this is thoroughly done, the incision is closed up by thick silk sutures passed deep through the abdominal walls so as to include both muscular and aponeurotic structures, as well as the parietal layer of peritoneum—the usual dressings are then applied. The stump as a rule drops off on the twelfth or thirteenth day. Considering that one of the cases operated on, *viz*, case IV, was a most unpromising one, we must consider that to save six out of the eight mothers and all the children was an eminently satisfactory result, and justifies the advice to operate without hesitation in such cases. I have just seen the four cases operated on during 1900, and they all seem to be thoroughly well and happy and free from all inconvenience of any kind. Two of them state that their milk dried up quickly, but the other two are still nursing their children. In all these cases I was ably assisted by Miss Harman, the Lady Doctor in charge, and in the last four was skilfully helped by Major Gubbin, R A M C.

OVARIOTOMY IN BURMA

By C DUER, M B, F R O S,

CAPTAIN, I M S,

Junior Civil Surgeon, Rangoon

IN response to a request of the Editor of the *Indian Medical Gazette*, I have furnished the following report of ovarian tumours operated on in Rangoon since the year 1898, these being, as far as I am aware, the only successful operations of the kind yet performed in Burma. Except when otherwise stated the operations were performed by me with the assistance of

Captain C C S Barry, I M S, to whom I am much indebted.

Case 1—A Burmese woman, aged 41 years, the mother of four children, the youngest being 13 years of age, was admitted to the General Hospital, Rangoon, with a globular fluctuating tumour, ascending from the pelvis to the umbilicus, of ten years' duration. Menstruation had ceased for ten years.

She was suffering from some peritonitis having pain and tenderness about the tumour, and a temperature which ranged from 100° to 101° F. The tumour, which proved to be a dermoid cyst of the left ovary, was removed on March 31st, 1898. It was universally adherent, but the adhesions were soft and easily separated and required no ligatures.

Recovery was uneventful. This was, I believe, the first successful ovariectomy performed in Burma.

Case 2—A Burmese woman, aged 24, suffering from a very large ovarian tumour, of nine years' duration, was operated on on November 8th, 1898. There were very many and large adhesions. It was a multilocular cyst of the right ovary with some intra cystic growths, and projecting from the outer surfaces were several small mushroom like growths. There was a good pedicle.

The patient made an excellent recovery, and was seen about four months after in apparently perfect health. Three months later (seven and a half months after the operation) she returned in poor health with very considerable distension of the abdomen said to be of only fifteen days' duration. The distension was evidently due partly to ascites, and partly to a tumour ascending from the right side of the pelvis. An exploratory laparotomy was performed, and much fluid and gelatinous material escaped from the abdomen. The abdomen was closed, but the patient died about 24 hours afterwards. At the *post mortem* examination ascending from the situation of the right broad ligament a very soft blood stained gelatinous tumour was found. It presented several very hard fibrous septa. The uterus was much pushed over to the left. There was slight general peritonitis. This was apparently an instance of an ordinary multilocular ovarian cyst becoming malignant.

Case 3—The next case was that of a Burmese woman, aged 38 years, with an exceedingly large tumour which almost filled the abdomen. It felt very fluctuating but proved to be completely filled with intra cystic growth. With considerable difficulty a ligature was passed round the pedicle and tied, and the pedicle divided above the ligature. The tumour was then delivered and separated by finally dividing some omental adhesions. The abdominal incision had to be very extensive. Unfortunately the ligature on the pedicle slipped and before it could be controlled, the patient lost a considerable amount of blood. The tumour weighed 50 lbs. The patient died of shock about twelve hours after. Captain Barry was unfortunate to be the operator in this the only unsuccessful case of the series, and I assisted at the operation, which was performed on December 23rd, 1898.

In dealing with such large cysts with solid contents some authorities recommend that the cyst should be incised and the contents scooped out with the hands. Others say this is likely to be attended by serious hemorrhage and should not be done. In the present case a clamp should have been applied to the pedicle before dividing it, as it was well nigh impossible with the available room to tie the ligature tightly. I think we had no suitable clamp at the time. Unless such a tumour be diminished in size by evacuating its contents, a very long incision must be necessary for its removal.

Case 4—The fourth case was that of a Burmese woman, aged 26 years, with a medium sized multilocular cyst which was removed on August 12th, 1899, with difficulty, and the patient made a rapid recovery.

Case 5—A small, very emaciated Burmese woman, aged 26 years, who appeared to be almost an appendage to

her tumour, was operated on on September 18th, 1899, for a multilocular ovarian cyst which with its contents weighed over 40lbs. The progress of the case afterwards gave no anxiety.

Five more successful operations have since been performed. Two were cysts of the broad ligament which were dealt with by incising the peritoneal covering towards the outer side of the base of the tumour and separating it inwards till a ligature could be satisfactorily applied near the corner of the uterus.

One was a large multilocular cyst which was removed by Major R. E. S. Davis, I.M.S. All the operations were performed at the Rangoon General Hospital with the exception of the last. This was a case of very large ovarian multilocular cyst, said to be of some ten years' growth which, with the assistance of Miss Cohen, the Superintendent, I removed at the Dufferin Hospital, Rangoon, a few weeks ago.

In performing these operations the smaller the abdominal incision, the better. One of three inches is nearly always sufficient, and this appears much less after removal of the tumour.

Immediately the cyst wall is exposed, the trochar is plunged into it, the previous introduction of the hand or fingers to feel for adhesions being useless and unnecessary.

Adhesions when likely to bleed should be ligatured with catgut or fine silk, the finer the silk consistent with strength, the better.

In all the cases the pedicle was tied with silk by Staffordshire knot or interlocking ligatures. The abdominal wound was closed by approximating the peritoneal edges with a continuous catgut suture, and then by interrupted silkworm gut sutures the remaining structures. I have been on the look-out for ventral herniæ, but have not yet seen one, but among natives comparatively few patients report themselves afterwards.

BULLET WOUND OF THE FOOT LOCALIZATION BY MEANS OF THE X-RAY—EXTRACTION RECOVERY

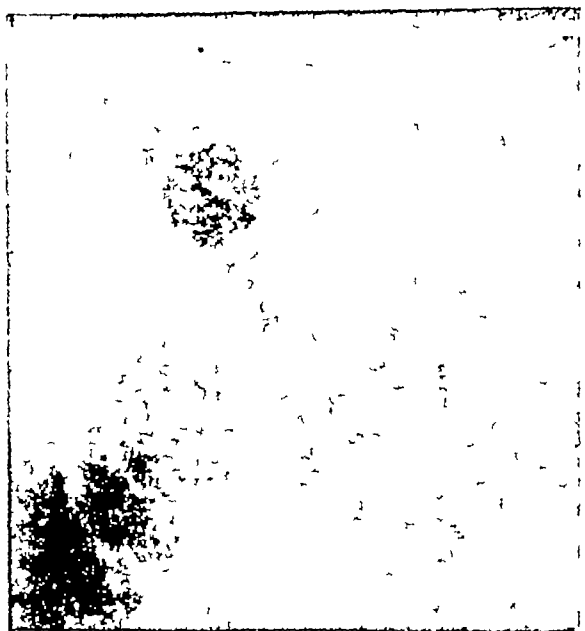
By H. AUSTEN SMITH, M.B., B.C.,

CAPTAIN, I.M.S.,

In Medical Charge of Native Troops, Cawnpore.

THE following case will probably be of interest from many points, and it is therefore I think worth recording. On the 4th November 1900 a Hindu boy, *æt* 12 years, a Kahar by caste, was admitted to the Cantonment General Hospital at Cawnpore, suffering from a bullet wound of the right foot. The history was that he had been accidentally shot while working in the fields by a man who was shooting at a small target. The wound was a small circular one, situated midway between the ankle and great toe joints on the inner side of the foot. It was about $\frac{1}{4}$ inch in diameter with a certain amount of bruising around and appeared to be, as the

history stated, caused by a bullet which was apparently one of large bore. There was no cut wound, and the bullet was therefore embedded as far as could be told somewhere in the tarsus bones. A probe could be passed into the wound for about two inches in a horizontal direction, and nothing definite could be felt. The wound was cleansed, dressed antiseptically, and left alone as it appeared to be exactly a case to be benefited by the use of the X-Ray. To have attempted to dissect out the bullet would have been working in the dark, and would probably have led to subsequent amputation of the foot, it would perhaps have been better to have left the case to nature. Fortunately there was an X-Ray apparatus available belonging to the Woollen Mills at Cawnpore, and I was very kindly allowed to use it by Mr. A. McRobert. On placing the foot before the fluorescent screen, in the shadow image cast on it by the X-Ray, a large black spot could



be distinctly seen rather to the outer side of the foot in the region of the tarsus, and therefore photographs were at once taken, one with the Crooke's tube placed above the foot, and one with it placed on the inner side of the foot, in this way I thought that the position of the bullet would be exactly localized. The photographs were excellent, as will be seen from the one enclosed, and by their aid I was enabled the next day to cut down about an inch from the outer side of the foot in a line with the wound, and found the bullet firmly embedded in the cuboid bone, so much so that I had to dig it out with a bone chisel. The bullet had entered about the region of the tuberosity of the scaphoid, passed through the bone and embedded itself in the cuboid bone. The bullet was a spherical one about $\frac{5}{8}$ th of an inch in diameter, and was fired as was afterwards found out from an ordinary 12-bore gun.

Both wounds, after the bullet was extracted, rapidly healed up, and at the end of a fortnight the boy was able to be discharged from the hospital. I saw him again a fortnight later, the wounds were firmly healed, and he had perfect movement of the foot and no pain at all, he could walk, run, jump, &c., without trouble. Considering the size of the bullet and the fact that it almost passed through the tarsus, smashing up probably the bones a good deal, it seemed to be rather a satisfactory result. The case also shows the great value of having an X-Ray apparatus available.

ATRESIA OF THE ANTERIOR NARES

By D M MOIR, A M, M D,

MAJOR, I M S,

General Hospital, Chittagong

COMPLETE occlusion of the anterior or posterior nares by membranous septa, congenital or as the result of disease, have been described, notably by Schrotter and Stoick. Still the condition is sufficiently rare to deserve record. This case I came across while on tour in the district, and had some difficulty in persuading the parents to bring the boy to hospital, partly owing to their dread of operation and partly to their belief in the hopelessness of cure.

History—M K, a boy nearly 13 years of age, suffered from congenital syphilis. The proof of this is that the mother suffered from syphilis during his pregnancy, he had a syphilitic eruption all over the body, with sores about the scrotum, during the first three months of infancy, and his condition improved under anti-syphilitic treatment. Moreover, his permanent teeth show the typical notched and peg-shaped appearance described by Hutchinson. Ulceration of, and purulent discharge from, the nasal cavities occurred about the fifth month, with epistaxis from the right nostril lasting off and on for a month. This was followed by bleeding from the right ear. Haemorrhage from the left nostril and ear commenced a little later than on the right side. Six weeks after the beginning of bleeding from the nose the nostrils became occluded, and from the time he was seven months of age, no air ever passed through the nose. Purulent discharge from the ears continued intermittently until he was between 7 and 8 years of age. At present the condition of the tympanic membranes confirm this history of early chronic middle ear disease. The parents make the extraordinary statement that he has now his third set of teeth, and that the two previous sets early became carious and dropped out.

Up to the age of 5 months he could suck the breast like other infants, after that time suckling became difficult, and impossible before the seventh month. After the fifth month he slept with his

mouth open, breathed noisily in his sleep, and frequently woke up as if suffocated. The boy has breathed entirely through the mouth for over a dozen years.

Condition on admission—A fairly healthy, well-grown boy in appearance, with no other signs of syphilis than the teeth, nose and ears. There is no falling in of the bridge of the nose, and no external symptoms of disease of the nasal bones and cartilages. Voice nasal in timbre, and articulation somewhat indistinct. Half an inch within the apertures of the anterior nares there are concave partitions stretching across the nasal cavities, which completely prevent the passage of air and present no trace of the minutest orifice. The posterior nares are quite free, but the pharynx shows numerous hypertrophied follicles.

Operation—He was admitted on the 21st November, and operated on next day. Under chloroform a thick, fleshy, transverse septum was dissected out of each nostril. Both nasal cavities were found much narrowed, especially the left, but they were dilated by the aid of strong forceps, followed by forcible insertion of the index finger. A thick-walled, medium-sized drainage tube was introduced into each nasal passage until visible below the soft palate. Anteriorly, the ends of the two tubes were united by a silk suture.

Treatment—Frequent irrigation through the tubes *in situ* from the 22nd till the 28th November, when they were removed. Two days later he was discharged from hospital with nasal passages of apparently normal calibre, through which the air passed freely. The nasal tone of the voice remained unchanged.

TREATMENT OF PNEUMONIA

A H W Ayling (*Brit Med Journ*, July 25th, 1898) recommends strongly the use of tincture of digitalis combined with tincture of ferric chloride in the treatment of pneumonia.

H W King (*Brit Med Journ*, Nov 12th, 1898) has had good results from the treatment of a case of pneumonia of the apex by large doses of the tincture of ferric chloride.

W J Sebring (*Med Rec*, April 22nd, 1898) used salicylic acid in treating 100 cases of pneumonia, giving 8 to 10 gr every two hours. But one death occurred, the symptoms were much improved, and the course of the disease shortened, he believes that the remedy is practically a specific.

G Stokes (*Lancet*, May 13th, 1899) reports a case of acute pneumonia, in which he used continuous inhalations of oxygen. He directs attention to the necessity of using an apparatus with a gas bag, in order to control the pressure and the amount of oxygen used, and to supply the gas properly warmed to the patient—*Practitioner*.

THE
Indian Medical Gazette.

FEBRUARY, 1901

THE ANNUAL REPORT OF THE SANITARY
 COMMISSIONER WITH THE GOVERN-
 MENT OF INDIA

NEVER before, perhaps since this Annual Report was first issued, has it been possible to review it at such an early date. This year it was signed on the 10th December, a date much earlier than usual, and one which reflects much credit on the staff of the Director-General's Office, for as the Provincial Reports, on which this one is founded, seldom reach the Simla office till past the middle of the year, it has never before been possible to get this report out before well on in the succeeding year.

It is not possible for us here to review all the mass of statistics and commentary contained in this large and valuable report, we purpose, therefore, confining ourselves at present to a consideration of one of its most interesting and suggestive sections.

Section X of the report is devoted to a resume of recent progress in our knowledge of the fevers and diseases of India—a subject which has often occupied these columns.

This section begins by noting that the brilliant researches of Ross and Manson, confirmed as they have been by the work of Koch and the Italian observers, have had a marked influence in inciting recent workers in India to the pursuit of observations in the field of parasitology thus opened up. Mention is made of the valuable researches of Captain S P James, I M S, (in our columns) on the metamorphosis of the filaria in the anopheles, the report then passes on to a consideration of certain aspects of the malaria question, and submits the recent report by Captain L Rogers, I M S, to a critical and exhaustive analysis. In favour of Captain Rogers's views it is shown that the fever death-rates given in the Bengal Sanitary Commissioner's Reports for the past five years confirm the conclusions arrived at by Captain Rogers by means of the "spleen test." In view of the very striking relation between the spleen rate and the death rate from "fever," in the areas around Calcutta examined, it is difficult to do

other than believe that the spleen rate is a very definite index of the prevalence of malaria, though the limitations of such epidemiological data are soon reached.

After an allusion to the excellent work of the late Captain James Murray, I M S, on the fevers of the Punjab, the Report goes on to discuss "the careful and instructive investigation" of the fatal form of malaria which has long been present in Rajahmundry Jail, a subject which has given rise to controversy in our columns very recently, but one "which is of great importance in view of its bearing on the question of the pathological significance of certain forms of tropical disease, which have been confused and given rise to controversy, viz., ber-ber, kala-azar, anklystomiasis and pernicious malaria." We commend these remarks to those interested in the question, and we agree with the remark that "this research has a notable value, as being the first endeavour to study the ravages of malaria in a large Indian prison under scientific conditions."

The Report next discusses the facts of our recent increased knowledge of the distribution of Malta fever in India, and shows that here again we have another fever differentiated "from the limbo of unsatisfactory classification."

The next subject discussed is one which has also occupied much attention in these columns of recent years, viz., cerebro-spinal fever. It is pointed out that the "new fever of a pernicious type," in Warda in the Central Provinces, which is described in Creighton's *History of Epidemics*, must now be considered to have been none other than this fatal form of fever. Reference is made to the history of the disease in India, and a detailed account is given of the evidence afforded by the recent outbreaks of cerebro-spinal fever, in the Central Jail at Bhagalpur, which go to make out a strong *prima facie* case for connecting cases with exposure to germa-laden dust.

The experiences at Quetta in 1898, which suggested a casual relation between enteric fever and infected dust are also discussed, and the limitations of this method are soon exposed by pursuing the inquiry in to other areas and over a series of years. It is pointed out that the seasonal incidence of the admissions of enteric gives a characteristic, but different curve in nearly every separate geographical group. Whereas in the Punjab and on the Frontier, the disease appears to be strictly limited to the

rainless months, and to vanish with the onset and continuation of the light and intermittent rainfall, on the other hand, in the Bombay Command, it is decidedly most prevalent during the heavy and continuous monsoon weather, while in the N W Provinces and in Southern India there is a marked double rise in the curve,—one during the hot weather, and one during the rains, “suggesting the influence of dust in the one case and of polluted water-supplies on the other.”

We have not space at present to refer to the remarks on the fevers of Kumaon Hills, nor to the table of the results of preventive inoculation against enteric fever, this is the less necessary, as both these subjects have been referred to recently in these pages. A table is also given which very clearly shows that, of recent years, while the diagnosis of “tubercle of the lungs” is an increasingly common one in the Jails of India, this increase runs parallel with a fall in the number of cases returned under the misleading headings of “anæmia and debility.” This table strongly supports the view that the increase of tuberculosis in Indian Jails (which we pointed out recently) is after all more apparent than real, being to a large extent due to greater care in the diagnosis, or rather in the registration of such cases.

We may conclude the review of this interesting and very suggestive section of the Report by the following quotation, which will be good news to all who are interested in medical progress in India.

“It may be noted that the establishment and early inauguration of the Central Bacteriological Institute for India is engaging attention. There will probably be some delay before the affiliated provincial institutes become accomplished facts. But the scheme has been cordially approved and moves towards completion, and the Government and the country are to be congratulated equally on a measure which cannot but prove of enormous benefit to medical science, and so promote the common weal.”

THE INDIAN AND COLONIAL ADDENDUM TO THE B P

WE have received an advance copy of the addendum to the 1898 edition of the British Pharmacopœia. We have already several times referred to the progress that was being made in

the bringing out of this addendum, and we congratulate Dr John Attfield, F.R.S., and the Pharmacopœia Committee of the General Medical Council on the publication of this addendum. It is the result of an endeavour to ascertain “in what degree the British Pharmacopœia can be better fitted than at present to meet Indian and Colonial requirements as regards important natural drugs and pharmaceutical preparations.”

The Committee were at great pains to ascertain, from all colonies and dependencies in the Empire, information as to what drugs were of use and worthy of official recognition in each country, with the object of a more extended use of them, either for their own special value, or as indigenous, and therefore possibly cheaper substitutes for the recognised drugs of the British Pharmacopœia.

It so happens that the publication of this addendum coincides in time with the completion of an abortive and somewhat unsatisfactory report of the Bengal Indigenous Drug Committee, and the publication of an admirable and useful book, the *Materia Medica for India*, by Dr C F Poynder and Mr D Hooper.

The Bengal Indigenous Drug Committee have, we understand, been examining a small number of native drugs, but have not been able to arrive at any conclusions of special value. The volume by Dr Poynder and Mr Hooper on the other hand is a genuinely useful work, and will, we believe, fulfil its authors' intention of being a text book on *Materia Medica* for students in Indian Medical Colleges, and a handbook for the general practitioner. The volume is not only a “*Materia Medica*” based on the last (1898) edition of the British Pharmacopœia, but to this is added, more or less, extensive references to 350 of the better known Indian indigenous drugs. The publication of the official addendum to the British Pharmacopœia will render the use of the book of Dr Poynder and Mr Hooper an absolute necessity to the practitioner, and they are to be congratulated on its timely publication.

We propose now to briefly mention the chief indigenous drugs which have received official baptism in the Addendum. We confine our remarks to Indian drugs only, not only because they are of most interest to us, but because they form the great majority of those mentioned in the Addendum.

The following table, which has been compiled from the Addendum, with the aid of the “*Mate-*”

Materia Medica for India," will show the extent to which our resources have been increased by the publication of the former. As many of the drugs are better known by their vernacular names, we quote them, on the authority of Dr Poynder and Mr Hooper —

Botanical Name	Vernacular Name	Therapeutic use	Preparations, Remarks, &c
Acacia cortex	Bubulachal	Astringent	Decoction
Aclypha	Rupi	Expectorant	Liq Extr Succus P & H, p 152
Mylabris	Aranga	Vesicant	Liq Lysop empl empl calif ungt Ungt c opio
Adhatoda	Rus, balas	Expectorant	Liq Extr Succus Tincture
Alstonia	Chattran	Astringent and febrifuge	"Ditabark" Infusion, Tincture
Andrographis	Kanul	Bitter tonic	Areol, Infusion Liq Cone Tinct.
Aristolochia	Isamul	Stomachic	Indian birthwort Liq Concen Tinct.
Aurantia Indic cortex		Stomachic	Indian orange peel
Azadirachta	Am	Astringent tonic	Neem Lark Infusion, Tincture
Belberfructus	Bel	Astringent, &c	Liquid Extract
Berberis	Chitra	Tonic, &c	Liq Concentr Tincture
Betel	Pan	Rubefacient & masticator	"Chavica betel"
Butea gummi	Palas le	Astringent	"Bengal kino"
— semina	Palas le		
Calotropis	Mudan	Alterative and emetic	Tincture A substitute for Ipecac
Cambogia Indica		Purgative	Garcinia morella, substitute for G Haub B P
Catechu nigrum	Kath	Purgative	Cutch catechu, a substitute for palo catechu
Cissampelos		Alterative	Decoct Liq extract, a substitute for the B P pareira
Cosinum	Jhakaldi	Tonic bitter	Infusion, Liq Conc and Tincture
Cucurbita semina.	Kumra	Anthelmintic, seeds.	Melon pumpkin
Datura folia et semina	Dhatura	Antispasmodic	Tincture
Gossypia radica cortex	Rui, Kapus	Emmenagogue, &c	Decoction
Hygrophila lappagol	Talmakhana	Demulcent	Decoction
Sappan	Ispagol	Demulcent	Decoction (like log wood)
Glycyrrhiza Plicorhiza	Kutli	Demulcent Stomachic	Spirit extract. Liquid extract and Tincture (A B — another drug "black hellebore" also called Kutli) A substitute for gum acacia
Gummi Indic			
Tinospora	Gulunchi	Bitter, tonic	Infus Tincture and Liq concn
Toddaha	Jangli lali mirich	Aromatic tonic	Infus Liq concn
Kaladana	(Pharbitisan)	Purgative	"Indian Jalap" Pulv comp and Tincture
Myrobalan	Harkara	Purgative, cholagogue	An ingredient of the domestic "triphala"
Ol Ajwain	Ajwain	Carmine	"Omum water"
Ol Arachis			Earthnut oil, a substitute for olive oil

Botanical Name	Vernacular Name	Therapeutic use	Preparations, Remarks, &c
Ol Graminis citratis		Carminative	"Ol Androphagi" Lemon grass oil Indian oil of Verbena
Ol Gynocardi		Local stimulant.	Imugra oil Ungt.
Ol Sesami Uguinea	Til Jangelli Konth	Demulcent, &c Expectorant	Til ka tel Acetum, Oxymel, Tincture, Pil Ung Co, Syrup Indian Squill
Podophyll Indica Resina	Papri	Cholagogue, &c	Tincture, "Indian podophyllin"
Valeriana Indica	Tugai, asarum	Antispasmodic	Tincture
Turpeth	Pitah, tal bud	Cathartic	"Indian Jalap"
Tylophora folia		Expectorant.	A substitute for Ipecacuanha

It will be seen from the above list that many well-known Indian drugs have now been officially recognised. Most of them are in every way efficient substitutes for the better known drugs of the British Pharmacopoeia. A few of them have been in frequent use in our hospitals and as domestic remedies. It is now to be hoped that a more extended use will be made of them, and that by that use a more thorough knowledge will be obtained of their exact therapeutic value.

For those who wish to study them or use them in their practice we can strongly recommend the *Materia Medica for India*,* by Dr Poynder and Mr Hooper.

LONDON LETTER

AN EPIDEMIC OF PERIPHERAL NEURITIS

MANCHESTER, Liverpool and many other towns of North-Eastern England have recently been suffering from a strange outbreak of peripheral neuritis. At first the cases were diagnosed as alcoholic neuritis, but then unusual number and certain symptoms not ordinarily met with in chronic alcoholism, set men to search for other causes. It became apparent on investigation that the victims were beer drinkers, belonging to the poorer classes, who consumed inferior brews of beer. Arsenic was suspected and, as a result of analysis, found in minute, though appreciable, quantity in the beer which the sufferers were in the habit of drinking. The question now arose—what ingredient in the brewing of beer was to blame. The hops were naturally

* An introduction to *Materia Medica for India*, by O F Poynder, M B, and D Hooper, FCS, FLS. Calcutta, 1901. Thacker, Spink & Co

suspected, but inquiry proved that no step in their cultivation or use afforded a chance of contamination with arsenic. Attention was now directed to the glucose or saccharine which is used in place of malt in the manufacture of cheap beer. It appears that what is called "invert" sugar is obtained from starches of various kinds by means of sulphuric acid. When the pure acid is used no harm results, but the commercial acid, obtained from non-pyrites, often contains a considerable proportion of arsenic, and it is from the use of this crude contaminated acid that it is believed the mischief has arisen. The first detailed medical description of the outbreak was contributed to the *British Medical Journal*, of 24th November, by Dr E S Reynolds, and his observations have been confirmed and amplified by numerous other writers. The papers have been full of the matter for the last fortnight, and the whole subject is being worked out thoroughly. The gravity of the thing may be understood from the statement published by Dr Niven, Medical Officer of Health for Manchester, who believes that within the last few months over 2,000 persons (in Manchester alone) have been affected to an extent sufficient to make it necessary for them to get medical advice. Numerous fatal cases have occurred, and inquests are to be held on these when the necessary scientific investigations have been completed. The evidence produced will, no doubt, throw a flood of light on the causation of the outbreak, which will take its place in history, side by side, with the famous Devonshire colic, which the researches of Sir George Baker showed to be due to the contamination of cider with lead. Meantime the public and the brewers are on the alert, and large quantities of suspected beer are being destroyed. A Committee of Inquiry has been appointed by the Manchester Brewers' Association, of which Sir Thomas Lauder Brunton, whose name is a guarantee of earnest searching work, is a Member. This body will naturally concern itself with beer only, but if the glucose theory of arsenical poisoning is correct, attention must be paid to other articles of consumption, such as jam and sweetmeats, into the preparation of which it enters.

IS IT BERI-BERI?

This is a question which occurred to many medical men, who had to deal with cases in hospital and private practice. Major Ronald Ross was summoned from Liverpool to examine

cases in the town of Chester, and is reported to have said that if he met with similar cases in India, he would have no hesitation in pronouncing them to be cases of beri-beri. He appears to have inoculated the Chester doctors with his opinion, for two of them, Dr Newall and Dytherch, writing in the *British Medical Journal*, offer detailed arguments in support of the outbreak being "some form of beri-beric peripheral neuritis." There are no doubt very remarkable points of resemblance between the two diseases, but there are also several points of dissimilarity. The leading symptoms in this outbreak are stated to be (1) running of eyes and nose, (2) pigmentation of skin, (3) various rashes, including peeling of hands and feet, (4) paralysis, analgesia, myalgia, (5) pins and needles in hands and feet, and (6) vomiting and diarrhoea in some cases. The phenomena marked (1), (2), (3) and (6) in this enumeration are not often met with in beri-beri—those marked (4) and (5) present more aggravated characters in this disease, and the diopsical symptoms so common and prominent in beri-beri have not attracted attention in this outbreak, except at Chester, where local, limited and fugacious oedemas have been noted. The burden of evidence so far is in favour of slow arsenical poisoning, and against beri-beri. It is reported in the papers that no discovery of arsenic has been made in the viscera of fatal cases, and the brewers are said to be preparing a strong defence on that basis. No doubt a Government inquiry will be instituted regarding this very important and somewhat alarming incident, and the public interest has been so strongly roused that the facts will certainly be thoroughly ascertained and sifted.

THE TREATMENT OF PULMONARY PHTHISIS

Curiously enough while a wholesale poisoning by arsenic in beer has startled and alarmed the community, a new "consumption cure," hailing from the continent, of which the principal ingredient is arsenic, has been trumpeted all over the land. The reputed author and inventor of this "cure" has disclaimed its vaunted virtue, and asserted that it is only one and a minor element in a system of treatment, of which the principal instrument is fresh pure air combined with careful regimen and generous dieting. This is as it ought to be, but the hankering after "cures" continues, and Dr Robert Maguire of the Brompton Hospital has

in his Harvard lecture, recently delivered and now being published, proclaimed a new method of treatment founded on rational grounds, and on bold and ambitious experimentation

The object in view is the destruction of the bacillus, which is the *causa causans* of tuberculous processes and lesions. Various efforts have, from time to time, been made to accomplish this, and by the use of germicides, administered by inhalation and otherwise, and by measuring the resisting and destructive power of the tissues and fluids, but without effect. Dr. Maguire proposes to reach the bacillus through the veins by injections of formaldehyde of sufficient strength, 1 in 2,000, of normal salt solution to kill all the microbes and not too strong to harm the host. The project is ingenious, and the manner of carrying it out apparently safe and effective, but additional trial is necessary ere it can be pronounced sound and certain.

K McL

Current Topics.

MOSQUITO PREVALENCE IN INDIA

In view of the great interest and importance of the question of the connection between mosquitoes and malaria, and the divergence of opinion, which still seems to exist on the subject, we issued a series of questions to a number of medical officers in India, with the view of ascertaining the actual prevalence of mosquitoes in the malarial parts of India. The replies, which we have received, we propose to here summarise, and take this opportunity of thanking the medical men who sent in the replies. We are also glad to be able to state that a large number of medical officers are working at this problem, though many felt that their observations were too few or in too early a stage to justify publication. Moreover several of our regular correspondents are absent on field service in China, and we may expect later to hear of their experiences of mosquitoes and fever in China during the past autumn. Already we have heard that the anopheles has been found in Hongkong, by Captain Victor Lindesay, I.M.S., thus contradicting a statement of a recent correspondent of the *Lancet*, who stated that it was unknown in that Colony.

We propose to deal with the Madras replies first, because we are able to summarise two important reports, viz., that by Captain G. G. Giffard, I.M.S., and that by Captain Cornwall, I.M.S., the Health Officer of the Madras Municipality.

The Notes on the causation of malarial fevers on the Coromandel Coast, by Captain Giffard, were read at a meeting of the South Indian Branch of the British Medical Association (*Transactions*, October 1900, page 453). Captain Giffard, while Medical Officer of the Chingleput District, had his attention called to the excessive prevalence of malarial fevers along the East Coast of India from Ennur to Coromandel. When he visited that district in February last year, he found a history of an excessive prevalence of malarial fevers during the past few years. At that time of year (February) the mosquitoes were few, but it was agreed that they had been a great pest during the rains in October and November. Captain Giffard then proceeded to make search for the anopheles larvæ, and formulated the following conclusions as the result of his inquiry.

1 The coast had been healthy, and severe malaria had been unknown before 1895.

2 From August to November is the worst time for fever.

3 Ennur had become so unhealthy that it had practically been abandoned by the Salt Department.

4 It was very difficult to get people to come to work along this coast.

5 It was stated that persons who cut down the trees in the casuarina plantations were always badly attacked with fever.

6 While fever was very bad in Ennur in 1895, it did not get bad in the Carimannul villages till 1897.

Captain Giffard points out that the stretch of coast from Ennur to Coromandel is practically a strip of sand dunes and paddy fields, with a canal running along its entire length. Even in the dry season the sub-soil water is only from six to twelve feet below the surface, and in the casuarina plantations, the coolies simply dig holes around the trees to water them. He also notes that the malaria-bearing mosquitoes were extraordinarily prevalent, even at the end of the cold season, and existed in thousands in every pool, well and casuarina pool examined. It was found impossible to adequately explain why the fever should have commenced to prevail to such an extent in the year 1895, but the officers of the Salt Department told Captain Giffard of similar waves of malarial fever prevalence in other salt factories along the east coast from Ganjam to Cheyoor.

The notes on mosquitoes and malaria by Captain Cornwall, I.M.S., appear, at page 43 of the *Administration Report of the Madras Municipality*, for 1899-00. He notes that mosquito larvæ were found to be very widely distributed in wells, swamps, paddy fields and pools of water, the necessary conditions being, undisturbed water, with plenty of floating garbage and vegetable matter, and that the water be not very salt. Every part of Madras city

furnished cases of malaria, and in every division of it pools and mosquito larvae were in abundance, anopheles larvae being plentiful, especially after the rains. Captain Cornwall then considers the question of prevention by the destruction of the mosquitoes. Drainage, filling up old wells, and the abolition of wet cultivation within municipal limits, would do much, he considers, but the use of larvicides over large areas is not practicable, nor can Captain Cornwall recommend as feasible Koch's plan of "cinchonising a whole community." It remains, therefore, he writes, to ruthlessly destroy the anopheles, and though this is within the limits of possibility in limited areas in cities, it is not to be accomplished over thousands of square miles of country under wet cultivation. With reference to a statement that malarial fevers have increased in prevalence, within the past few years, in the city of Madras, this, if it is a fact, can be explained by the fact that with a pipe water-supply many old wells have become disused, and are found to become breeding places for the anopheles. To this we would add (as Lieutenant-Colonel Giles has pointed out in towns in the North-West Provinces) that the water which leaks and drips away from the water hydrants is apt to form in every street ideal breeding grounds for mosquitoes. In Madras Captain Cornwall has noted three species of mosquito—one, the most common, is either *An. Claviger* or *An. Pictus*, and has four bars visible to the naked eye, and pigmented scales confined to the costal margin, and the costal and sub-costal nervures. Another species has only two bars, and the third has three deeply pigmented bars along the costal margin. It is also noted that the *Culex* probably only takes to cannibalism (v. *I M G* of 1900, p. 186) when its usual diet fails. In a letter Captain Cornwall adds that in Madras mosquitoes are never entirely absent, but they are most common when a sufficiency of water is lying about, i.e., in January, February and March after the rains. They decrease in the hot weather and increase again in the showery months of July, August and September. In the last three months of the year, when the heavy rains have swamped the breeding places, the mosquitoes, both adult and larval, are most difficult to find.

Captain C. J. Fearnside, I.M.S., writes that in Rajahmundry mosquitoes seem to exist all the year round, and that he finds that anopheles breeds anywhere, in a beaker of water as well as in a puddle. He has also seen anopheles to feed greedily in the day-time. With regard to the evolution of the malarial parasite, Captain Fearnside notes that in some species of anopheles crescents and spring tertian parasites will not develop at all, the crescents may be "old and impotent" (Giassi), but this will not explain the non-development of the spring tertians. He also noted that he had frequently found cres-

cents in cases known to have suffered from only mild attacks of fever.

Major J. Smyth, I.M.S., writes from Bangalore that mosquitoes are present throughout the year, but in diminished numbers in January and December. Last year anopheles were present in certain localities in large numbers, especially in July. The following note is of special interest, last year at Bangalore some new plots of land were opened out for the extension of the town, and one of the new extensions became so malarious that it had to be abandoned, all the children suffered from ague, and most of them developed enlarged spleens. In this part of the extensions Major Smyth found anopheles larvae very prevalent in some low-lying pools, in two other extensions no malaria prevailed, and no anopheles larvae could be found.

This observation at Bangalore is very interesting in connection with the much discussed question of malarial outbreaks among men employed in engineering and building operations.

From Berhampur, Bengal, Major J. H. T. Walsh, I.M.S., writes that anopheles is present in small numbers all the year, but only a few in the dry hot months. They appear in large numbers during breaks in the rains, and after the heavy floods of last September none were seen for several days. Though Berhampur is a very "malarious" district very few cases of true "ague" were seen in the jail and asylum. Anopheles larvae seem to breed anywhere, he says—in tanks or even in a bathroom.

Major C. R. M. Green, I.M.S., F.R.C.S., writes from Mozambique that mosquitoes are present all the year, but most common in September, October and November. The adult anopheles is most easily found in October and November.

Captain Maddox writes from Chapra that August, September and October are the worst months for mosquitoes. He has found anopheles larvae in small pools and ditches near habitations. Lieutenant-Colonel T. Grainger, I.M.S., writes that in Motihari, in Champaran district, a malarious place, not far from the Nipal Hills, mosquitoes are always present, except when they have been knocked about by a few days bad weather in the rains. Lieutenant-Colonel R. N. Campbell, I.M.S., is informed that in Purnea mosquitoes come in March and remain till November, and he can testify to their prevalence in September, October and November. At Ranchi Captain W. W. Clemesha, I.M.S., says mosquitoes are very abundant for ten months of the year, January being the month most free from them, they are most common in October and November.

Major A. H. Nott, I.M.S., writes from Hazaribagh, that mosquitoes as a family are most prevalent at the commencement of the hot weather, and again at the end of the rainy season. In Hazaribagh itself they are almost com-

pletely absent in January, but this is not the case in the low-lying parts of the district. The apparent absence in the hot period, from the middle of April to the middle of June, is probably due to the use of *punkas* and mosquito nets, and to the prevailing high winds, they are generally only too evident in spells of calm weather and in the breaks in the rains.

Adult anopheles, chiefly *An. Rosii* and *An. Nigerrimus*, are fairly common in most houses in Hazaribagh, in the month of December all the mosquitoes captured by Major Nott were of the *Culex* family, and if the statements as to position are to be trusted the culices are always more abundant than the anopheles.

Major Nott adds that the height of the fever season comes about a month earlier in this district than in other Bengal districts, September being usually the most unhealthy season, followed by August and then October. Hazaribagh is by no means a non-malarious district, and parts of it are as unhealthy as the *Tera*. The small ring form of the organism is the one most commonly seen, but all forms may be met with.

On the Bombay side, Captain J. G. McNaught, R.A.M.C., writes that mosquitoes are most prevalent in Deolali in the rains, from June to October, as well as in November. This year he could not find anopheles till July, at first they were very scarce, then they rapidly increased in numbers, till in August and September they were present in scores in private houses and in the hospital wards. The variety appeared to be *An. Superpictus*, with four black spots on the anterior border of the wings. They became scarce in October, and again appeared in great numbers in November. As regards attitude when at rest, only a few showed as great an angle as that described by Ross, most sat with their bodies sticking out from the wall, but others did not exhibit this characteristic attitude. Captain McNaught was not able to find the anopheles larvæ in Deolali, though he searched pools, puddles, old quarries and nullahs for them. *Culex*, however, he found in tubs.

At Nasik Captain Thomas Jackson, I.M.S., states that mosquitoes were present in December and adult anopheles also. The larvæ of anopheles were plentiful in December in all pools examined, and along the margins of slowly running streams.

In the Punjab Major W. B. Lane, I.M.S., writes that in Montgomery mosquitoes are prevalent in March and April, and in September, October and part of November. Montgomery is a very dry district with an annual rainfall of little over one inch. The fever season seems to commence with the onset of the real cold weather. In a dry place like Montgomery there are very few pools for the larvæ to breed in, but Major Lane believes they breed in the wet irrigated land. Lieutenant S. S. O'Meara, I.M.S., writes that his regiment, the XI Bengal Lancers, arrived at

Mian Mu on October 30th, and within a week they had 57 fever cases in hospital. Mosquitoes were prevalent in the beginning of November, and nearly all were anopheles, the other two native regiments at Mian Mu also suffered severely from fever. It is rare to have so many fever cases in hospital in the end of November, and it is noteworthy that mosquitoes remained later than usual.

For a discussion of the question in the Central Provinces we refer to the article in this issue by Major Andrew Buchanan, I.M.S., of Nagpur.

We have now given a brief resumé of all the replies to our queries, which have come to hand as we go to press. It is satisfactory to see so many men in India at work on this question. It will be agreed that the known prevalence of the malarial fevers agrees well with the fact of mosquito prevalence noted in the above replies, we are aware of no facts as to the malarial fevers in India, which militates against the mosquito theory as at present formulated. Of course there is still a lot to be learned before the matter is settled, and we may, however, hope that the publication of the observations above recorded will stimulate other men to further researches, and that, in the coming hot weather and rains, the opportunity will be taken of closely observing the prevalence both of malarial fevers and of the anopheles.*

THE REPORTS OF THE MALARIA COMMITTEE OF THE ROYAL SOCIETY

We are indebted to the courtesy of the Assistant Secretary of the Royal Society for sending us copies of the two pamphlets issued, containing the reports of the Malaria Committee appointed by the Society in 1898.

Our readers are aware that in that year the Royal Society under the Presidency of Lord Lister, and in conjunction with the Colonial Office appointed Dr. C. W. Daniels, Dr. J. W. W. Stephens and Mr. S. R. Christophers to continue the investigations into the question of mosquitoes and malaria so ably begun by Manson and Major Ross. Their reports are now published and are obtainable from the Society's publishers, Messrs. Harrison & Sons, of St. Martin's Lane, London.

In the first report Dr. Daniels gives his researches on the transmission of *Plasmodium* to birds by the mosquito, thus confirming, as is well known, all the investigations of Major Ross. The next paper is by Dr. Stephens and Mr. Christophers and consists of a very complete investigation of the blood conditions in the malarial and blackwater fevers of British Central Africa. As regards blackwater fever the writers state that in the five cases examined (why only five?), they

* It may be observed that the word 'anopheles' has been used indifferently as a singular or as a plural, the correct plural, *anopheletes*, is cumbersome and seems to be little used.

failed to find any special parasite or organism. Nor was the malarial parasite present in any of the five, nevertheless they consider that these fevers are malarial in nature, and the absence of the parasite was due to the previous use of quinine. They also point out that in the absence of the parasite from the use of quinine, there are still two means of affirming a malarial origin, *viz*, the presence of pigmented leucocytes, and the leucocytic variation.

The cases quoted seem to lend support to the view of Koch that the onset of the symptom of blackwater is in some cases due to the use of quinine. Experiments *in vitro* failed to produce similar phenomena and direct action is not ascribed to the quinine, but that drug by its lethal action on the parasites seems to have the power "of liberating a sufficient quantity of toxins from the protoplasm to bring about hæmoglobinuria."

As regards the ordinary fevers of British Central Africa, they appear to be due to the parasites of the aestivo-autumnal type.

In the next paper Drs Stephens and Christophers discuss the distribution of the anopheles in Sierra Leone. This is a paper well deserving of study, though it does little more than confirm at all points the results of Major Ross' expedition to the West Coast. Larvæ were found in abundance in all directions, in streams, rocky pools, and in drains. The adult insects were found "in gardens and houses especially when overcrowding was present." Much of this paper is taken up in discussing means of prevention. The larvicidal effect of petroleum was, we are told, very striking, but the final result (as has been found in India) is "the immediate return of the insects on the cessation of the application of petroleum." We therefore come back to the conclusion which was known before the mosquito theory had explained its action, *viz*, drainage, with filling up of pools, levelling of the ground, &c, in short all the measures which have long been believed to have banished, not the anopheles, but malaria, from the fens of England. Moreover, as the anopheles is prone to collecting in small dirty overcrowded houses, and to hide in the daytime among vegetation, the cleaning away of useless vegetation, and the regulation of overcrowded hovels must have a very considerable effect upon the final result. One of the most important practical points brought out by these reports is that "the native is the prime agent in the malarial infection of Europeans." The meaning of this is, that in the dirty and close ill-ventilated hovels of the natives of Central Africa the malarial mosquito find a most congenial dwelling place, as is shown by the fact that in all the native villages examined "from fifty to ninety per cent of the children were infected with malaria," and a considerable proportion of these infected children "contained crescentic bodies, which

very rapidly took on the spherical and flagellating form requisite for the transmission of human malaria to the mosquito." This point is emphasised in another paper, and the avoidance of native villages and huts is urged upon travellers and expeditions as one of the best means of preventing outbreaks of fever.

Our authors also add that the "personal precautions now so flagrantly neglected" should be observed, but when these come to mean the wearing of "boots, gaiters and putties or thick trousers" we are afraid that these "simple" precautions will continue to be neglected by many Europeans, if the hot weather of Africa is anything like that of India.

A consideration of the reports above alluded to, and the recent lecture by Major Ross at *The Society of Arts*, will convince anyone that the "methods of the new prophylaxis" are after all turning out to be what has been long known, *viz*, that to exterminate malaria we must drain the land and freely use quinine. In the discussion on Major Ross's lecture Professor Ray Lankester stated that it was certainly not by the destruction of the mosquito that the fens of Cambridgeshire has been freed of malaria, for, said he, *there are probably as many anopheles in England to-day as ever there were*. He attributed this result to the free use of quinine by the inhabitants of the fens, "the parasite was killed in the human being and therefore the gnat could obtain no fresh supply." We however agree with Major Ross as to the impossibility "of cinchonising a whole community," a feat which seemed so easy to Koch. Nor will the Italian method alone prove practicable, it will be difficult to induce the dwellers in malarial places to live in mosquito-protected houses, and to wear gloves, masks, &c, especially in the hot weather. We may sum up the situation in the words of Major Ross in the lecture just quoted "On the whole I adhere to the method proposed by me to the Government of India nearly two years ago, namely that of surface drainage. To this I add the removal of undergrowth and the use of powdered culicides in certain cases, and if possible segregation and large airy houses for Europeans." As regards the destruction of mosquitoes Major Ross maintains that his views have been misrepresented on this point, he never advocated the destruction of mosquitoes as a means of ridding large areas of malaria, but he still thinks that the mosquitoes can be very largely reduced in numbers by thus carefully treating the whole of certain towns. Of course such a method will be expensive, but "it is not so expensive as attempting to rid all its inhabitants of the malaria parasite by quinine, or to provide them all, or even many of them with copper wire screens." "Outside the towns," says Major Ross, "we can only fall back upon our nets, but inside good drainage, clearance of underwood,

and municipal penalties for breeding mosquitoes should be insisted upon"

The malaria parasite and its transmission by the mosquito is the clue to the new prophylaxis, and it is probable that it is by a combination of all the various methods advocated (which after all amount to not being bitten by an infected mosquito) that we may hope to at least reduce the amount of malarial fever, primarily induced, for the prevention of relapses, which are perhaps more common than the primary infections, we can safely trust to *thorough* treatment by quinine, not quitting it the day after the fever has ceased, but continuing it for several weeks at intervals after convalescence has been established

HÆMOGLOBINURIA IN MALARIA

At the Meeting of the American Medical Association held at Atlantic City in June last there was a long discussion on the question of hæmoglobinuria. It seems that what is called "malarial hæmoglobinuria" is a not uncommon affection in the Southern United States, it is not found however in Baltimore, the fevers of which have been very thoroughly studied by the staff of the Johns Hopkins University. It would appear from the papers and discussion reported in the *Journal of the American Medical Association* (Nov 17th, 1900,) that practitioners are accustomed to find this symptom in cases of what they call malaria, and to regard it as a symptom or complication of malarial fever, *eg*, Dr W B Burns considers the pathology of malarial hæmoglobinuria is essentially the same as that of malignant malaria, and that this symptom is due to a toxin produced by the parasite acting the same way as other toxic agents, as chlorate of potash, naphthol, carbonic acid or quinine. This view however was strongly opposed by Dr W Krauss, who refused to believe that malaria is the essential factor. In a discussion in which many crude opinions on malaria and the mosquito were put forth it is refreshing to read the remarks of Dr W S Thayer, of Baltimore, a recognised authority on the subject. He does not say definitely that he considers this hæmoglobinuria a malarial disease, but he is strongly in favour of giving quinine, when (and only when) the parasites have been discovered in the blood. He also pointed out, what those who have little studied the subject often put forward, that the mere presence of mosquitoes does not imply necessarily the presence of malarial fevers, "the great mass of mosquitoes are perfectly harmless as far as malaria goes". The anopheles may even be abundant, but if no malarial case exists for it to draw the parasite from, it is clear that it cannot convey what does not exist. A recent case was alluded to by Dr Thayer where anopheles were present in a locality but there was

no malarial fever, till the advent of a party of Italian labourers, who brought the parasite with them in their blood, and started an outbreak. Dr Albert Woldbeirt, whose work on mosquito malaria has been alluded to in these columns (*I M G*, 1900, p 229) made the important statement that "the length of time an anopheles remains infected after it has bitten a malarial fever case is about three weeks"

THE MEDICAL COUNCIL AND THE D P H QUALIFICATION

THE report on the curriculum for the qualification of D P H which was sprung upon an astonished profession by the Public Health Committee of the General Medical Council is one which should be seriously studied by all medical men in India and the Colonies. It seems to us to practically amount to the exclusion of all medical officers of Government in India or the Colonies from these diplomas.

The new rules as published in the *British Medical Journal*, for December 15th, are to apply to all diplomas which are to be considered worthy of "recognition in the Medical Register" after the 1st January 1902.

The rules are—

(1) That the candidate shall have been a qualified medical practitioner for not less than twelve months before admission to any part of any examination for the public health diploma.

(2) Every candidate must have a certificate of his having (after qualification) received practical instruction in an approved laboratory for six months, in chemistry, bacteriology, and the pathology of diseases transmissible to man from animals.

(3) Every candidate must produce evidence that (after qualification) he has been associated day by day in the duty, routine and special, of Public Health Administration, under the supervision of a Medical Officer of Health, either in active duty, or a Teacher of Public Health in a recognised medical school. Moreover three of the six months thus passed must be distinct and separate from the period passed in laboratory instruction.

(4) Every candidate must also produce evidence that (after qualification) he has attended for three months the practice of a hospital for infectious diseases at which opportunities are afforded for the study of methods of administration.

What then does this amount to? The candidate must spend at least nine months after qualification in the special work for this diploma, this is no doubt highly desirable for medical men who intend to make public health work the business of their lives, but it will press very hardly on the medical officer of Government who desires to gain the special knowledge of questions of public health and sanitation which is only possible to those who have studied some such

course Medical officers who have entered the services or who intend to enter them have, therefore, only one of two courses open to them if they wish for this special diploma, that is, they, may either devote nine months or so to the work as above prescribed, and so lose a year's seniority and possibly get behind hand with the other subjects which pay best at the examination for the services, or they must trust to luck in some time during their service being able to get sufficient furlough or special leave to enable them to fulfil the necessary conditions, as laid down in the above new regulations.

It has always been a debatable subject among Medical Officers as whether (apart from the special knowledge gained) it is worth their while taking this diploma, though a large number of medical officers have done so, but if it comes to their losing a whole year's seniority for the problematical advantages attached to this diploma, it is not very likely that many will be advised to do so. Consequently they can only hope to attain to this degree when they have nine months or so of furlough in hand, and furlough has by no means been so easily obtained in recent years that many will be inclined to spend it in the daily attendance on the "routine and special duties" of a medical officer of health in Great Britain, and in learning a "routine" which will be of little use to them in the discharge of the duties imposed upon them in India or the Colonies.

We have no intention of advocating a cheaper or less thorough examination for medical officers in the Services, let the examination be as strict, as practical, and as thorough as the Medical Council can desire, but frame its regulations in such a way that it will be possible for Medical Officers of Government to take this special diploma, one which in our opinion should be in the possession of every medical officer of the Home and Indian Army, where questions of sanitation and of hygiene are of daily and hourly importance.

It seems to us that the three months' Hygiene course at Netley should be allowed to count something, it is one that no ordinary practitioner goes through, this with a three month's special laboratory course should entitle the candidate (who has passed the Service examination) to be allowed to enter for the Diploma examination, then let the examination be made as strict and practical as possible. If the Army Medical Officer is unable to pass it, so much the worse for himself, at present he is, in the majority of cases, debarr'd from even aspiring to attain it.

The only proper outcome of these regulations will be that if the Government of India and the War Office wish their Medical Officers to become specially qualified in Preventive Medicine, they simply must grant special leave for the purpose. It is not fair to expect men to spend a large portion of their hardly earned furlough in attaining these diplomas.

THE BOMBAY MEDICAL SOCIETY

THE September issue of the Transactions of the *Bombay Medical and Physical Society* contains several interesting articles, perhaps the most interesting being one by Dr R Row, M.D., on "enteric lesions produced artificially by intoxication with the products of the bacillus coli communis and its allies in rabbits and rats." Dr. Row was led to this study by having met with a good number of cases of continued fever which were neither enteric nor Malta, yet, owing to the prominence of abdominal signs and symptoms, seemed to be closely connected with some intestinal organisms.

The pamphlet is illustrated with a series of remarkable coloured plates showing the lesions produced in the small intestine by the products of bacilli of the coli race. Dr Row summarises his researches as follows—

- (1) Very marked intestinal lesions can be produced by intoxication only with the products of the bacilli of coli typhoid race by the method I have described—
- (2) The intensity of the lesion and the marked nature of the swelling, &c., are more pronounced in intoxications with products of bacilli nearer the coli series than in those of B.T., though with regard to the intensity of the symptoms following on the injection, the reverse is the case.
- (3) In the face of the lesions produced, it is impossible to ignore the possible factor played by the B.C.C. in typhoid fever.
- (4) Though Enteric is a specific fever itself, the continued types of fevers met with in Bombay (when a negative agglutination test with B.T. or others than B.C.C. is obtained) are, in my opinion, caused by a certain amount of infection and intoxication of organisms of coli race.
- (5) These various lesions produced by intoxication confirm Professor Martin's observation on the relationship in the poisons from the thermometric and symptomatic evidence.

That a continued fever with enteric lesions exists in Bombay, which is clinically not enteric, is an observation first made by Vandyke Carter, and Dr Row's researches showing that enteric lesions can be artificially produced by poisons generated by bacilli other than the bacillus typhosus, is consequently most interesting in this connection, the more so that such continuous fevers have been shown by their failure to react with the serum tests, to be neither typhoid nor Malta. We await with interest a further research into these "Bombay fevers."

The November issue of the Transactions contains a case of pneumonia, in which sunstroke occurred while the patient was convalescent, by Captain J. B. Smith, I.M.S., Civil-Surgeon, Shikarpur, five surgical cases, reported by Lieut-Col W. K. Hatch, I.M.S., F.R.C.S., and four cases of ovariectomy, done at Poona, reported by Captain A. Hooton, I.M.S. It is very satisfactory to see how flourishing the Bombay Medical and Physical Society is, the Transactions constantly contain very valuable and interesting papers.

VENEREAL DISEASES IN RANGOON

THE Burma Branch of the British Medical Association has published the report of the Sub-Committee on Venereal Diseases in Rangoon, and it must form very unpleasant reading to any who took part in the repeal of the Contagious Diseases Act. There was full control up to 1884, partial control to 1889, and from 1890 no control. The report shows that while the total attendance at hospitals has only increased in the ten years, 1889 to 1898, by a quarter, the attendance of venereal cases has almost tripled, and the severe cases needing in-door treatment has more than quadrupled. Among British soldiers, while the Contagious Diseases Act was in force, the rate of admissions per mille was 155, while in the years of partial or no control it has risen to an average of 376 per mille (in 1896 it was no less than 573 per mille). The consensus of medical opinion, European and Native, shows that there has been a very large increase in venereal diseases since the abolition of the Act.

The new Cantonment Regulations of 1899 are utterly useless as regards Rangoon, the soldiers resort to the town, as there are no prostitutes resident in cantonments.

The Committee point out that in former times the Burmese adopted for themselves deterrent measures for the regulation and discouragement of prostitution. These useful measures were superseded by the Contagious Diseases Acts, and the abolition of these has left Rangoon in a worse state than in olden days. The number of cases of acquired syphilis in Eurasian and Native school boys under sixteen years is very striking, and Dr Hoyle has called attention to the high infantile mortality and the large proportion of still-births.

The Committee, wisely believing that moral influences are of slow growth, recommend the establishment of a Contagious Disease Hospital, the registration and compulsory examination of all prostitutes by female medical practitioners, the establishment of a Magdalene Institution for the reclamation of prostitutes, and, to check the widely extended system of kidnapping young girls in outlying districts the adoption of an Act similar to the English Vagrancy Act of 1898.

We commend this Report to the attention of Government and the public. We are glad to see that the Right Revd Lord Bishop Strachan was in the Chan at the meeting which appointed the Sub-Committee.

ARSENIC AS A POSSIBLE CAUSE OF BERI BERI

THE recent widespread outbreak of cases of peripheral neuritis, which have been traced in the large majority of cases to arsenic introduced in the manufacture of the cheaper forms of beer suggests that it is not impossible that some cases of what in the East is called beri-beri may be

due to arsenic or other drug introduced accidentally in the food, either in the processes of cooking or in the preparation of the grain. Major Ronald Ross has already made this suggestion, which is one at least deserving of being borne in mind in the investigation of those cases on ship-board which have always seemed to us to be somewhat mysterious. We cannot follow Major Ross when he suggests a source of beri-beri in lemonade made from European chemicals. The people in Burma, Madras and the Further East who suffer most from beri-beri scarcely drink much lemonade, nor can we realise the "half dozen routes" through which the inhabitants of jails, hospitals and asylums may suffer from arsenical poisoning. Arsenic we all know can produce symptoms almost identical with cholera, and no doubt cases of acute arsenic poisoning do occur in every cholera outbreak, but no one would suggest that cholera was a form of arsenical poisoning. However, the suggestion is one not to be lost sight of, we know very little of the etiology of beri-beri, that it is a "food disease" is a view which has much to recommend it. Captain Rost in his article on the subject in our December issue traced it to an organism found in rice beer. It would be worth paying attention to the materials used in the manufacture of the beer, indeed the whole subject of the composition of native beers and strong drinks is one which, we believe, has had little attention paid to it.

It has even been suggested in some quarters that the whole question of the etiology of peripheral neuritis may after all be summed up rather in arsenical impurities rather than in the alcohol itself.

It is satisfactory to know that the light German beers which are so largely used in India by Europeans, have so far been found innocuous as regards arsenic.

Cases of obscure neuritis due to dosing by mercury and arsenic by quacks and such like practitioners might well, when combined with malarial oedema and anæmia, be mistaken for beri-beri.

LIEUTENANT-COLONEL G M GILES, F.M.S., has issued a very timely and useful pamphlet with illustrations, entitled "Notes on Collecting and Preserving Mosquitoes." This, with the collector's box, is indispensable to everyone who wishes to send mosquitoes for identification. The pamphlet gives first a short description of the insects (with illustrations which do credit to the up-country press which printed them), then follows clear and definite instructions as to collecting mosquitoes, killing them when collected, preserving and pinning the insects. Lieutenant-Colonel Giles will be grateful for any specimens that collectors will send to him.

WE were glad to read the noble words preached by the Bishop of Calcutta on the Pasteur

Institute, which have been widely published in the newspapers. We hope his words will be widely read and remembered by many people whose kindness of heart is greater than their acquaintance with the subject.

DR MABERLY writes us from Salt River, Cape Colony, that he has had splendid results with the sulphate of soda treatment of dysentery and has found it, so far, the best treatment for a nasty form of septic diarrhoea common among babies in the Colony.

Owing to the confusion produced by the war nothing has been done towards the investigation of South African drugs, but Dr Mabery is convinced that even in the third week of typhoid *moussonia ovata* will be found effective in healing the bowel ulceration.

MISS M TRAIL CHRISTIE, MD (Lond), DPH, has been appointed to the Calcutta Dufferin Hospital. Miss Christie is well known in Calcutta, having worked at the Chansa plague camp, and with the Health Officer of Calcutta during the plague outbreak of 1898.

WHEN the surgical results of the Boer War have been tabulated and published, it is known that they will show the necessity for considerable modification of our views on the surgery of bullet wounds. The same has been the result of the recent Spanish-American War, and the just published Report of the Surgeon-General of the United States Army emphasises this fact. In the recent war with Spain the proportion of killed to wounded was 1 to 7.4, whereas in the American Civil War it was 1 to 4.5. Moreover of the wounded who lived to come to the hand of the Surgeons in the recent war only 6 per cent died, compared with 14 per cent in the Civil War. In the Civil War 44 per cent of gun-shot fractures of the femur were amputated, in the late war only 6 cases out of 82. This lessened mortality is attributed to the protection given by the "first field dressing."

Of penetrating wounds of the chest the mortality has fallen from 62 per cent in the Civil War to 27 per cent in the recent war. The change for the better is not so marked in abdominal wounds, but the rate of mortality has fallen from 87 per cent to 70 per cent, fractures of the cranium also show a lessened fatality from 59 per cent to 54.

It will be interesting to compare these results with those of the Boer War.

At the end of the year 1900 plague was reported in the following parts of the world — Cape Colony, Aden, Buenos Ayres, Adelaide, Sidney, Brazil, China, Egypt, Formosa, Bremen,

India, Japan, Madagascar, Mauritius, Paraguay, the Philippines, Oporto, Turkey and Smyrna.

THE figures which we quoted recently as to appendicitis in India, which were based upon the tabulated returns of the various provinces are incorrect, for in the Calcutta Medical College Hospital and the General Hospital, Madras, a considerable number of cases of appendicitis are admitted and operated on every year. The cases have apparently been grouped under wrong headings in the Annual Hospital Reports.

The very large amount of good work done in the Calcutta Medical College Hospital is unknown to medical men out of Calcutta, and will remain unknown as long as the Annual Report of the College is not published.

TETANUS is said to be "by far the most dreaded disease" on the West Coast of Africa. Guinea worm is also very widely prevalent.

A NEW edition of Hirsch's Geographical Pathology is badly wanted now-a-days. The statements in it are sadly behind the times.

THREE species of Anopheles have now been identified in the Mauritius.

TYPHOID is one of the greatest scourges of the European population of Shanghai.

We have been obliged, for want of space, to hold over a lot of interesting articles in hand.

IN a sketch of the life of General Claud Martin, which recently appeared in *The Empress*, it is noted that Claud Martin suffered from stone for many years and devised an instrument for its relief, which was the prototype of the modern lithotrite.

CAPT C J FFARNSIDE, IMS of Rajahmundry has succeeded in inoculating himself with malarial fever by means of infected mosquitoes. We will give details of the experiment in our next issue.

We are requested to state that the Central Committee of the Dufferin Fund has at the moment several applicants upon its list of candidates for employment who are available for early employment. Native States and Local Committees who are in need of the services of Lady Doctors, Assistant Surgeons or Hospital Assistants, are invited to apply to Colonel E H Fenn, R.A.M.C., Honorary Secretary, Viceroy's Camp.

Reviews.

The Theory and Practice of Hygiene.—By Colonel J L. NOTTER and Major W H HORROCKS, R.A.M.C., London J & A Churchill, 1900

THE well-known volume on Hygiene by Parkes and DeChaumont is one which is known to all our readers. The present volume, which is based on that of Parkes, has been very largely re-written to keep pace with advances made in the study of Hygiene. This is the second edition bearing the name of Colonel Lane Notter. When in 1896 it was found necessary to bring out a new edition of Parkes' Hygiene it was found necessary practically to re-write the whole work, as it was found that mere revision or re-editing would be inadequate for the requirements of the times, hence the edition of 1896 was brought out in the names of Colonel Notter and Major Firth. To those who had the older volumes many passages were familiar, and it was a matter of comment at the time that the name of one medical officer who largely helped Professor DeChaumont, in the last edition he brought out, should not have been mentioned in the preface. The present volume bears on the cover the same names, Notter and Firth, as in the edition of 1896, but on the title page the name of Major Horrocks appears along with that of Colonel Notter, Major Horrocks being responsible for the portions on the bacteriological examination of water supplies.

However, leaving aside the claims of various authors to their share in the volume, there is no manner of doubt that the authors have succeeded in producing the best treatise on Hygiene in the English language. The present edition differs from its predecessor of 1896 chiefly in the considerable alterations needed in the chapters on sewage disposal, water supplies, immunity, disinfection and infective diseases, especially malaria. The first 140 pages devoted to water examination are particularly complete and up-to-date, and copiously illustrated with plates of water organisms, we know of no volume in which these matters are treated in more detail or with greater thoroughness and care. An admirable and clear account is also given of the recent methods proposed for the biological disposal of sewage. Other chapters which struck us as being particularly well written were those on immunity, parasites, offensive trades and infectious diseases. It is to be regretted, we think, that the plan of the book necessitated the treating of the subject of malaria in different parts, the information given is as well up-to-date as any possible work could be on a subject which has advanced so much within the past year, but we would like to have seen a full account of the whole subject written from the modern standpoint

in which an endeavour would be made to explain old facts in the light of new theory.

The volume as it now stands is intended for the use of medical officers of health in England, and consequently the portions of Parkes which dealt with army and navy conditions are not given such a prominent place. These subjects are, however, adequately treated, and will well repay perusal. The remarks on venereal disease in the Army are based upon the paper read by Colonel Notter at the last International Congress of Medicine.

The volume, as it now stands, is one which can be strongly recommended both for the Civil Medical Officer of health, and for the Army Medical Officer, it is thoroughly up to date and authoritative, and in fact is the best in many respects of all the larger treatises on the theory and practice of Hygiene. The illustrations, which were always a marked feature of the earlier editions, are now still better and more numerous than ever, and the publishers have spared no pains to bring out the book in a style worthy of the subject and the well-known popularity of the volume.

The Science of Hygiene—A Text-book of Laboratory practice.—By WALTER C C PARKES, DPH, FCS, &c London Methuen & Co, 1900

THE special claim of this text-book of Laboratory Hygiene is based on the fact that hitherto no single text book dealing with all the practical laboratory work now required for the Diploma in Public Health has hitherto appeared. It has consequently the great advantage of having the several portions of the work collected under one cover, a manifest convenience to workers.

The volume, which is well printed and illustrated and of a handy size, commences with a description of the microscope, and gives advice to purchasers of microscopes, viz, "Get an expert to pick your lenses." The next chapter gives clear and simple directions as to use of and cleaning of coverslips, slides, platinum wires, &c. It then goes on to give instruction on the types of micro-organisms, their examination in the living condition, stains, re-agents, methods of staining, of cultivating, and the details of the systematic examination of the more important bacteria. After this a clear account is given of the examination of milk, ice-creams, water, air and soil. Part two is devoted to microscopy, and deals with starch, grain, parasites, milk, butter, margarine, tea, coffee, &c, clothing and human parasites, both internal and external. All these paragraphs are extremely well illustrated. The third part is devoted to chemistry, and deals with standard solutions, analyses of water and their interpretation, the analysis of milk, bread, alcoholic beverages, &c, and the examination for poisonous gases, and

of soil. The fourth part deals with physics and gives all the details necessary for the examination of questions of temperature, atmospheric-pressure, hygrometry, ventilation, &c. The last part describes the methods of vital statistics, and deals with estimation of population, birth and death-rates, and the preparation of life tables. An appendix gives a lot of useful tables, and a complete index completes a most admirable text-book for laboratory use, and one which can be strongly recommended to medical officers in India, either for use in the course of their many duties, or as a handbook for those going through special postgraduate courses.

Stone, Prostate and other Urinary Disorders
Being a series of selected papers—By MR

REGINALD HARRISON, F.R.C.S., 190 pages

THIS little book does not pretend to be a systematic treatise covering the whole subject. It is a well written little book not of the nature of a "Cram" nor yet is it a mass of padding such as we usually see in lectures. It is written with reasonable conciseness, and yet sufficiently full on the different topics. It covers a good deal of ground, as it not only deals with stone but also with enlarged prostate, including vasectomy and diseased condition of the bladder, urethra and some kidney conditions, including albuminuria. It is a very interesting contribution to the subject, and is very suggestive in many respects. We think it a book of considerable interest to Indian Surgeons. In the chapter on stone, we observe that, of the 110 patients on whom the author operated from 1890-97, there were one-fourth years of age, and one-fifth years, and few of them under fifty years of age. The chapter on stone is both interesting and suggestive.

Hernia—By W. McADAM ECCLES, M.B., F.R.C.S.
 BAILLIÈRE, TINDALL AND CO., London, 1900
 Demy 8vo. Price 7s 6d nett

ALTHOUGH there is nothing mysterious or obscure about the subject of hernia for a specialist to claim it as his own particular preserve, yet the lesion is so common, and its effects frequently so serious, that we gladly welcome a practical monograph on this thesis. The reader will be disappointed, who expects a complete dissertation embracing a historical retrospect of etiology and treatment, an elaborate statistical analysis, or even a critical disquisition on the comparative merits of the operations in vogue amongst the leading surgeons of our own or other countries. The task the author set himself was to present a succinct account of the origin, symptoms and treatment of abdominal hernia from the point of view of the surgeon in practice, and he has acquitted himself with a very fair measure of success, as might be expected from an alumnus and teacher of St Bartholomew's, a Medical School that has produced so much brilliant and valuable surgical work.

The book does the publishers credit in every way, being well bound and printed in beautifully clear type, on finely glazed paper, with a praiseworthy absence of typographical errors. It is profusely illustrated, there being nearly 100 illustrations to about 250 pages of letterpress, a large number of which are reproductions of photographs graphically delineating the points described. Mr Eccles does not state the basis of his calculations, but his estimated percentage of the comparative frequency of the three chief varieties of hernia is as follows—Inguinal, 73.41, Femoral, 18.0, Umbilical, 8.47, while the fraction, 0.12, covers all other varieties. He computes the incidence in each sex thus—

	Inguinal	Femoral	Umbilical
Males	96.33	2.53	1.14
Females	50.6	33.5	15.9

During the last quarter of a century, what may be called the Listerian period, a vast amount of accurate records have been accumulated in the principal hospitals of Great Britain and Ireland, concerning the mortality of hernia operations, both of those undertaken for strangulation and the radical operations. It is a pity the author did not investigate this subject so as to give us reliable statistics on hernia mortality, a subject on which he is mute. It would also have been of great practical interest if he could have supplemented this with the results of so-called "radical cures" two or more years after operations, but this is an impossible task for a hospital surgeon, and one that could only be satisfactorily dealt with by collective investigation from the note-books of the private cases of leading surgeons of ripe experience. The author rightly deprecates the use of the term "radical cure," and proposes as a substitute "radical operation" or "radical operation with a view to cure."

As predisposing causes he enumerates heredity, age, sex, conformation of abdomen, length of mesentery and prolapse of the mesentery. The exciting causes given are occupation, pregnancy and parturition, lung diseases, crying of infants, straining during micturition and defecation, tight-lacing, ascites and increase of bulk of abdominal viscera. The last we believe to be a factor of considerable importance in the etiology and prevalence of hernia amongst Bengalis, but possibly conformation of abdomen, undue length or prolapse of the mesentery may be auxiliary causes, though we know of no observations on this point. Scattered through the book there is much useful information on the subject of trusses, their varieties and the proper method of measuring for them. Supplementing this there are figures of the different trusses, and photographs showing them applied to the living subject. The types exemplified by the "Mcman" and the "Salmon and Oly" are not recommended. The author

favours the form of truss with a spring considerably longer than a semi-circle, as the most suitable for the majority of herniæ. He considers that the truss should always be worn in the erect attitude, but that it may be discarded when the patient lies down.

In the sections devoted to herniotomy for strangulation, operations for inguinal and femoral herniæ, the procedure is clearly described, but attention may be directed to some important omissions. With regard to division of the constriction, Mr Eccles very properly points out that frequently the constricting bands may be divided from without inwards, that this is the safest method, and that in this way incision of the peritoneum directly under the site of constriction may be avoided,—though, of course, the sac should be opened at a lower or more distal point. But nowhere does he commit himself to a definite statement as to the usual direction of the incision or nick in the constriction from within in those cases of inguinal and femoral hernia, in which it is impossible to divide from above downwards or from without inwards. Now this is quite as important as giving instructions for the hour of operation, particular form of antiseptic lotion, length of skin incision, &c. In a book of this didactic character, the established rules of surgery should at least be mentioned, *eg*, in strangulated inguinal hernia of the oblique variety, incise directly upwards, in the direct variety incise a little inwards as well as upwards, whilst in strangulated femoral hernia the nick in Gimbernat's ligament must be made upwards and inwards. Mr Eccles, on the contrary, distinctly asserts that "No incision of the unyielding margins of the aperture (the femoral ring) is permissible, but they can be somewhat stretched without any harm being done."

There is a want of up-to-dateness in ignoring the subject of sphincter incisions, separation of muscular fibres according to the direction of the different planes. In the past the neglect of this principle of valve action has been a fruitful source of failure, as in the present its observance is an element of success in all operations involving the abdominal muscles. In the radical operations for hernia, with the exception of Bassini's, Nature's plan of sphincter action and aponeurotic valve has been more honoured in the breach than in its observance. Another omission is that no mention is made of the plan of utilising an up-turned flap of the pectineus muscle for closure of the femoral ring.

In a modern work on hernia, of which a considerable portion is devoted to operative procedure, one is disappointed to find that the methods of Halsted, Bassini, Macewen and Kocher are relegated to a couple of pages at the fag-end of a chapter. In a future edition we may hope for the *ipsissima verba* of these surgeons, and of others such as Ball, Barker, Heuston and Cush-

ing, as well as a *resumé* of the departure in hernial surgery, initiated almost simultaneously by Mitchell Banks in Liverpool, T Annandale in Edinburgh, and K McLeod in Calcutta.

Diseases of the Throat, Nose and Ear.—By P McBRIDE, M.D. YOUNG J PENTLAND, Edinburgh and London, 1900. Price 25s.

THIS is a handsome, well published volume, but expensive, and on that account probably not so commonly used by students, as its cheaper rivals, one of which it was a pleasure to review some years ago when it reached a fourth Edition. We refer of course to "*The Practitioner's Handbook of the Diseases of the Ear and Naso-Pharynx*," by Macnaughton Jones and W R H Stewart. It is no doubt the illustrations which make Dr McBride's book a high priced one. They are almost perfect, especially the pictures, for that is what they are, of the diseases of the larynx and the tympanum. The book has reached a third edition, in itself a recommendation. The first edition appeared in 1891, and this new issue "has been carefully revised, and in parts re-written." The book begins with a description of the usual methods in vogue for the examination of the throat. These call for no remark except that whenever possible a good artificial light, electric or acetylene, is better for such examinations than even the best natural light. These directions are followed by four pages dealing with *General Therapeutics*. As the matter is repeated in the special sections, it might have been omitted altogether, and it seems unnecessary to give prominence to Morell Mackenzie's Pharyngeal bistoury since any bistoury will do quite as well if a thin strip of lint or plaster is wound round the blade to within a quarter of an inch of the point. The diseases included in the scheme of the book are clearly described, and generally the student is supposed to be acquainted with the anatomy and physiology of the various organs. The instructions for removing foreign bodies from the various passages are good, but the reader should be warned against using cold injections when syringing out the ear. In treating of suppurative disease of the middle ear with perforation of the tympanum, Dr McBride points out that pain is often due to the perforation being too small to give free issue to the discharge. In such cases the treatment advised is free incision followed by injection of warm boracic lotion. Dr McBride has occasionally found this "act like a charm." The Surgeon need not hesitate, from fear of subsequent bad results, for surgical wounds of the tympanum heal with readiness. The question of artificial aids, when the tympanum is permanently perforated, remains as before. The various patent 'drums' and the simple expedient of a plug of cotton wool are described. All that can be said of any of them is that they give good

results in some cases, and not in others. While treating of *nervous cough*, the author remarks that, "very rarely nervous cough seems to have occurred as the first symptom of locomotor ataxia." This is interesting, and probably new to many. In the absence of satisfactory chest symptoms the cause of coughing is often difficult to determine, and may be sought in the stomach, ear, eye and perhaps more frequently than is recognised in a congested uvula. For its size and value the uvula gives at times infinite annoyance, and where a patient complains of cough almost absent when standing or sitting, but coming on almost immediately on lying down, an examination should be made of the uvula. If it is found enlarged, no time should be wasted in applying drugs, using cocaine as a local anæsthetic snip off a good sized piece. One will earn the gratitude of many a sufferer from sleepless nights by this simple operation.

Current Literature.

MEDICINE

Administration of Anæsthetics to Children

—By W J McCardie, B.A., M.D., and C F Marshall, M.D., F.R.C.S. "Treatment," April, 1900. The writers are of opinion that the administration of anæsthetics, especially chloroform, is not so free from danger as is generally supposed. They advocate the use of nitrous oxide gas, or gas and oxygen, for small operations, for long operations they prefer ether preceded by gas, the A.C.E. mixture, or a mixture consisting of two parts of ether to one of chloroform.

Since fear and excitement greatly retard digestion in children they urge special care in the preparation for anæsthesia. Milk they consider a snare to be avoided, also bread and butter. Only easily digested liquids should be given, the best of which is whey. Bovril or meat broth are also approved of. But as young children suffer severely from deprivation of food, it is better to give the last meal, of nourishing liquids and perhaps brandy, three hours before operation.

The endeavour should be to avoid crying and struggling. The dosage of the anæsthetic should be at first continuous and of gradually increasing strength while the maintenance of narcosis should be by intermittent doses. If there should be a tendency to vomiting during induction, it is better to get rid of the stomach contents before proceeding. Spasm of the glottis is a frequent source of danger in children. The corneal and conjunctival reflexes are early abolished, hence it is better to trust absence of reflex after pinching the skin on the inner side of the thigh or rubbing the skin over the ribs. The pulse is not so reliable a guide as in adults, and the "vascular reflex" after pinching the lip or lobe of the ear is more satisfactory.

D M MOIR

EXTRACTS FROM FOREIGN MEDICAL JOURNALS

Cocainæ Hydrochloras in Parotid Fistula

—Media and Abbamondi have found that injections of a 4% solution of the salt, along the fistulous tract, made three times a day, bring about a speedy closure of the fistula. The warmer the solution, the better—so long

as it is not more than 59° or 55°c, as at 60°c Argonine is formed.—[*Sem. Méd.*, 22 of 1900.]

Blackwater fever after Eucillin.—Richter relates a case which terminated fatally, and backs up Albert Plehn's statement that, although less cinchonism is caused by Eucillin than by any other salt of quinine, yet the deterioration of the blood is just as great in the case of Eucillin.—[*Deutsch. Med. Wochenschr.*, 7th June 1900.]

Should one treat a high temperature as dangerous?—Lépine, of Lyons, publishes in *La Semaine Médicale*, No 25 of 1900, the substance of a communication which he made in the therapeutical section of the International Medical Congress.

After an interesting historical review of the subject, enriched by a catholic bibliography, he answers the question in the affirmative, basing his opinion on clinical experience. Incidentally he notes that he has found *Pyramidon* in 30 cgm doses to be quite as efficacious as *Antipyrin* in gram doses, and much more easily borne by the patient, as an antipyretic.

The position of the Chordæ Vocales in the Cadaver

—At the last meeting of the Medical Society of Vienna, Fein communicated the results of observations made by him on 50 bodies.

Before the onset of rigor mortis the chordæ vocales occupy a median position, being only 35 mm apart. When rigor mortis sets in they gradually become more and more separated until they are at 6 mm distance from each other, and then, as the rigor mortis passes off, they again gradually become approximated.

On the cadaver being inclined to either side, the rima undergoes a corresponding deviation. In still born infants, who have never breathed, the chordæ are very close to each other, a fact which is of some importance in legal medicine.

The Perfect Aseptic Hand.

—Wormser of Bâle in an article in the *Sem. Méd.*, 26 of 1900, states that the only means of assuring the non infection of the wound by the surgeon's hands, is the wearing of gutta percha gloves. These are so thin that the sense of touch is but little interfered with, whereas thread gloves, as used by Mickulicz, cause a considerable blunting of tactile sensibility.

Wormser recommends the dusting of the inside of the gloves with powdered talc, before placing them in the autoclave—(they require 20 minutes at 110° C for their thorough sterilisation). This glove powder aids the surgeon in his attempt to put on the gloves without bursting the material, and tends to preserve the gutta percha from the effects of repeated sterilisations. Would that some one could tell us now to preserve gutta percha gloves in the Indian climate!

Injury to the Thoracic Duct, during an operation.

—In the *Gazzetta degli ospedali e delle cliniche*, No 69, Calzolari relates a case in which, while operating for tuberculous glands in the neck, he cut the thoracic duct. As he could not find the seat of injury at the bottom of the deep operation wound, he contented himself with packing the wound with gauze, with the most satisfactory result.

From the *Deutsche Medicinische Wochenschrift*, No 44 of 1900, it appears that Dr Kuhn, the Chief Surgeon of the Imperial troops in German S.W. Africa, believes that he has found a means of vaccination against malaria. The serum of horses which are suffering from horse sickness (this appears to be the disease meant by "die 'Starbe' der Pferde") is used to vaccinate cases of malaria, and recovery is stated to follow, without the uses of quinine. The vaccination causes no unpleasant effects, but the patients suffer from an "after fever" of mild type, which, subjectively at least, is different from an actual malarial attack. A marked immunity is conferred by the vaccination, for of 50 cases

so vaccinated not one was attacked during the malarial season, November—May, while the unvaccinated suffered severely. Dr Kuhn is now on the way to Europe, so we may expect fuller details soon.

W D SUTHERLAND, M D

ANNUAL REPORTS (BOMBAY AND MADRAS)

THE CIVIL MEDICAL INSTITUTIONS OF BOMBAY (CITY)

St GEORGE'S HOSPITAL, Bombay, in 1899, was in charge of Lieutenant-Colonel H W B Boyd, F R C S, F R C S I, and Major R J Baker, M D, F R C S. There was an increase in the attendance, both in door and out-door. There were 75 plague cases treated during the year. Major J G Hojel, F R C S, was the Physician in charge, and the Surgeon General with the Government of Bombay considered that the professional work of the Hospital was highly creditable to the staff.

The Jamsjeeb Jeejeebhoy Hospital was in charge of Lieutenant-Colonel W K Hatch, F R C S, and Lieutenant-Colonel H P Dimmock, F R C S. There was a large increase in the number of patients compared with the previous year.

A considerable number of plague cases were also admitted, but the most important feature is the continued and marked increase in the admissions for phthisis, respiratory affections and hepatic abscess. The Surgeon General comments upon the steady increase in the mortality from phthisis in Bombay City, this is very clearly shown both for phthisis and for other pulmonary diseases in the figures quoted from the Municipal registers. No explanation is attempted of this marked increase but the fact is undoubted, and is receiving attention.

The Hospital for Diseases of Women and Children were under charge of Lieutenant-Colonel H P Dimmock, F R C S, and showed also an increased attendance. Among the diseases of the patients, we notice cases of whooping cough and rickets. The major operations included litholapaxy, suprapubic cystotomy, hernia, trephining, Caesarean section and craniotomy. Lieutenant-Colonel Dimmock's successful management of these popular institutions is noticed by the Surgeon General, as well as the good work of Dr R N Khory, M D, the Honorary Physician, and Mr Dubash, the Honorary Surgeon, and Assistant Surgeon H W D Prescott.

The Jehangir Ophthalmic Hospital was in charge of Major T E Dyson and Major C H L Meyer, during the absence of Major H Herbert, F R C S, F R C S I. The work is yearly increasing and the Ophthalmic Surgeon urges an increase in the staff. There were 751 in-door and 11,474 out-door patients treated, a considerable increase over the previous year, in fact, the figures for 1899 were the highest on record. The number of beds should be increased, as even cataract operation cases have sometimes to be refused admission. There were 430 operations for cataract. The Surgeon General comments upon the necessity of very largely increasing the size of this hospital, and on the want of in-door accommodation for European patients. The working of the Eye Hospital is eminently satisfactory, and reflects great credit on Major H Herbert, F R C S, and his staff.

The Gokuldas Tejpal Native General Hospital was under charge of Lieutenant-Colonel Henderson, Major Hojel, Major R J Baker and Major Barry for various periods of the year. Here again an increase in the attendance is reported. A large number of patients were admitted in the last stage of exhaustion from privation and disease, such should, with advantage to all concerned, be sent to a poor house, did such exist in Bombay. Lieutenant-Colonel Henderson also calls attention to the very unsatisfactory means of conveying patients with broken heads and limbs huddled into the first carriage available. A proper system of street ambulance carts is badly wanted. The medical officer notices the death of the House Surgeon, Assistant-Surgeon J W Dias, a skilful and trusted officer.

The Kama and other hospitals under the charge of Dr (Miss) Benson and Dr Alice Cothorn has also a record of good work. The attendance is increasing, 494 surgical operations were performed.

The work of the Police Hospital under Dr Sidney Smith, and of the Matunga Leper Asylum, is also noticed favourably in the Report.

The Surgeon General comments upon the increase in the number of fever cases, and thinks it probably that some cases of relapsing fever are included under the head 'fevers'. In the table of operations performed by individual officers, Lieutenant-Colonel Hatch, F R C S, heads the list with 240 major operations, including 33 stone cases, 25 abscesses of liver, 19 abdominal sections, 14 amputations, 43 operations on bone, 42 excisions of joints and 63 tumours. Major T E Dyson is next on list with 223 cataracts, and Major Quicke, F R C S, with 146 operations, including 11 abdominal sections, and 31 for abscess of liver.

Owing to the late receipt of this interesting Report, it is too late to more fully notice the excellent medical and surgical work done in the various hospitals of Bombay, we hope next time to receive the reports in good time, and to notice them at greater length.

THE REPORT OF THE GENERAL HOSPITAL, MADRAS

THIS is a valuable and interesting Report which we do not remember to have before had the privilege of examining. The General Hospital, Madras, has 500 beds, and had an average, in 1899, daily sick, of 362 (90 Europeans and 268 Natives). The fall off in the attendance is partly attributed to change of officers and the employment of non-service medical men, new to the country and its ways. There has been a marked reduction in the number of septic cases "acquired in hospital," and though such cases are not infrequently admitted, the measures taken have been successful in preventing their spread. As regards operations, owing to the new method of registration, the total shows a falling off, this is not the case with regard to the more important surgical operations, and the repute of the hospital for surgery has been well maintained.

The following figures show the relative prevalence of enteric in Europeans and Natives in the City of Madras while in 1898-99 the number of enteric cases from the smaller European community was 63, there were only six cases in Natives. It is noted that aluminium cooking utensils were in use and will result in a saving, as these vessels do not require tinning. A trial of the electric light was made but the matter has not been decided. During the year eleven officers of the Indian Medical Service held the various appointments, and for short periods eight temporary plague medical officers. The nurses in this institution have a good reputation, but the nursing staff needs considerable strengthening. Among the more important surgical operations, we notice the following—Operations on the skull and brain 5, on spine, 1, hernia, 1, tracheotomy, 11, a-splachnomy, 1, laparotomy, 7, gastro-tomy, 1, excision of the vermiform appendix, 2, colotomy, 3, intestinal obstruction 6, hernia, for strangulation, 32, radical cure, 55, abscess of the liver, 11, nephrotomy, 1, for piles, 77 (chiefly by cauterization), vesical calculus, 7 (by lithotomy), hydrocele, 707, of which 14 were by incision, 88 by excision of sac, 14 by incision, 9 tapping with incision and the rest by simple tapping, ovariotomy, 1. Of the larger operations most appear to have been done by Lieutenant-Colonel J Matland, F R C S, Lieutenant-Colonel Allison, Captain W J Niblock, Major R Robertson, and Captain H Fraser, F R C S.

In the wards of the First Physician, Major Robertson, F R C S, reports that 130 cases of tubercle of lung were treated, and that tuberculous laryngitis is common among the women. He also notes how unsatisfactory the treatment of chronic malarial cachexia is. Anemia is attributed to privation mostly, the presence of ova (of parasites) is regarded only as a coincidence. There were 28 admissions and 6 deaths from Bright's disease and 42 cases of valvular disease of the heart, attributed by the patients to the results of childbirth. Major Robertson also refers to one lithotomy and three suprapubic operations. Cases of cancerous oris are not uncommon, and often come in a state beyond surgical aid. Two varieties of tetanus are noted, one mild, due to worms and the more severe traumatic variety. There were five cases of cancer of breast operated on in the women's wards and one case of lingual cancer. Major A J Grant, F R C S, the then Assistant Physician, gives an interesting account of the cases in his wards. He notes that cases of enteric do well if early admitted, a case of probable botulism is noted, and one of acute rheumatic fever plus alcoholism. Two strange cases of hæmaturia are referred to. We are in complete accord with Major Grant's remarks on the necessity of a separate heading in the nomenclature for malaria, since the abolition of the term malarial cachexia, by the Royal College of Physicians, there is no correct way of recording malarial cases, which do not happen to be ague or remittent fever. The result of this change is that all sorts of chronic or irregular malarial cases must be wrongly returned as a-cue.

Captain C B Harrison, F R C S, notes that the ova of the ankylostoma were so common that the thymol treatment was only adopted where they were in great excess, and the anemia was marked. An interesting case of ascending palsy is briefly referred to, such cases might well have been reported in full in our columns.

Lieutenant-Colonel Matland, in his part of the Report, reports a total of 1,819 surgical operations, the hernia operations were particularly successful, 112, strangulated, 32 cases, 6 deaths incurred, 2 cases, 1 death, radical cure 51 cases with no deaths. There were 37 cases of elephantiasis of the scrotum with no deaths, and 11 cases of liver abscess with 6 deaths (54 per cent.). In the Senior Surgeon's wards there were 16 cases of cancer with 1 death, operated on. Two interesting operations on sarcoma of the tibia are detailed. All the piles cases were treated by clamp and cauterization. Lieutenant-Colonel Matland notes that the disease which he has described in our columns as "infective excoriating granuloma," is steadily on the increase, owing to its often being regarded as syphilitic, the wrong treatment is often adopted. Cases affecting the interior of the mouth are referred to.

Lieutenant-Colonel Matland also refers to the comparative rarity of tuberculous disease of bone in Madras, while phthisis and lymphatic gland tuberculosis is common.

Captain W J Niblock, F R C S, was in charge of the wards of the Second Surgeon for nine months, and Captain P C Gablett, F R C S, for three months. In these wards, many hernia operations were done, especially the radical cure (Bassini's operation). For

hydrocoele there were 211 operations, 51 injections of carbolic acid, 38 by partial excision, and 119 "incision and retroversion of sac." This is the operation described by Major J J Pratt, I M S, in our columns (1898, p 287), but we understand it has for a long time been done in the wards of the Medical College Calcutta. Captain Niblock finds that it does well in small or medium size hydroceles, but "is not applicable to those of large size with thickened sacs." One operation of vasectomy for enlarged prostate is noted, and was followed by decided improvement. There were three amputations for mycetoma, and other cases of this disease were seen. There were also 22 operations for cancer, of penis and face chiefly. In these wards it is noted that three arthroplasties for tuberculous joint disease were satisfactorily performed. One case of cicatrising granuloma in a boy about ten or twelve years of age is noted, though Manson has stated that this disease has not been observed before puberty.

The Report is one of all round good work. Why does not the Medical College, Calcutta, publish its report?

Correspondence.

THE INCUBATION PERIOD OF CEREBRO SPINAL FEVER

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I have read with great interest the valuable series of cases reported by Major Harold Brown, I M S, in the January number of the *Indian Medical Gazette*. His experience in the main agrees with what has been observed in the Bhagalpur Jail by Major Buchanan and myself.

Major Brown will, however, forgive me if I point out that, in our present state of ignorance as to the exact way in which the meningitis is brought about, it would not be safe to draw any conclusion as to the period of incubation from the cases reported. It does not necessarily follow that because a man was in an infected coolie depot for 93 days before the symptoms appeared that that period may be taken as the time of incubation. He may only have been subjected to the virus for a few days or hours before the attack. The statement then that "broadly the period of incubation of this disease is from one to five weeks" is hardly warranted by the facts displayed.

On the contrary the fact that two cases occurred who had only been in the depots for six days points to a much shorter period of incubation for it is hardly likely that they would have been attacked the instant they arrived, especially in sheds which had been disinfected. It would, however, be most interesting if Major Brown could collect any cases in which the disease has attacked coolies after they had left the depot, after a short sojourn therein. The coolie shipping agents might be able to give some information.

As regards the diagnosis of plague made in one case, I can quite understand that in an epidemic of plague such a mistake might be made. Indeed in a case where the patient becomes rapidly unconscious or delirious and the temperature high when there is no muscular rigidity, the diagnosis must necessarily remain doubtful, if lumbar puncture is not resorted to.

As to whether mania follows this fever, the following may be read with interest.—During the height of the epidemic in Bhagalpur Jail a prisoner previously in very good health began to behave queerly, and was stupid and dull. His temperature was raised, but not above 101° F. He was of course taken to be a case of cerebro spinal fever and was carefully watched. He had various delusions and then dirty habits began, eating his own filth and the like. On the sixth day he passed into a state of coma and died. *Post mortem* there was a considerable accumulation of cerebro spinal fluid, and some hyperæmia of the meninges, but not a trace of lymph or pus over the brain or cord which was carefully examined. The case was returned as one of acute mania, but I must say that I am still doubtful of its real nature.

Yours, &c,

CECIL R STEVENS, M D,

BHAGALPUR,

January 16th

Captain, I M S

[Captain Stevens raises an interesting point as to the incubation period of this disease. The evidence recorded is scanty but what there is points to a rather short period. In Connellman's report cases are referred to (p 23) with an incubation period of about five days. The most definite cases bearing on this point published are those given by Captain H E H Smith, R A M C, in his report on the Khartoum outbreak of 1895. These may be briefly given here—(1) Nafr of the 11th Sudan Regiment arrived at Omdurman from the White Nile on March 20th, and was admitted with meningitis on March 23rd, or 52 hours after his arrival in good health from a non infected area, (2) H A, detailed for

duty in the cerebro-spinal tents on the 25th March was attacked with the disease on the 26th. (3) The wife of a soldier in the infected regiment arrived at Omdurman from Halfa in the beginning of April and was attacked within thirty hours of her arrival and died within forty hours. (4) A Dervish deserter came in from the Halfa camp and was attacked two and a half days after his arrival. Captain Smith puts the incubation period at "from one and a half to three days. A M D Report for 1895.

At Captain Stevens' suggestion we examined the records of the cases in the Bhagalpur Jail during the past year. In most cases the patient had been for more or less long periods on certain forms of dusty labour which we have associated with the disease and such prove nothing. In others, however, more definite evidence is forthcoming, some of which may be here detailed—(1) An old man was discharged from hospital on 21st July to rice cleaning and was admitted to hospital for cerebro-spinal fever on 27th or after six days on this dusty form of labour. (2) Another man previously on oil mill, had his labour changed to rice cleaning on 17th August after three days on this labour he was admitted to hospital for the same disease. (3) Another man who had worked in the factory, was admitted for cerebro spinal fever on the eighth day after being put on work in the grain godown, (4) Another man was admitted on 10th April only nine days after he was put on garden labour, (5) Another man, a weaver, had his work changed on 31st March to be a messenger, he was attacked on third day after (April 2nd). (6) Another man after having been in hospital for some trivial disease was sent to paddy husking on 3rd April and was admitted for cerebro spinal fever on 10th April. There were several other such cases which go to show that the incubation period is usually of short duration. The latter cases will not be thoroughly understood without a knowledge of the strong evidence connecting such cases with germ laden dust. We hope to publish the report on this Bhagalpur outbreak in a short time.

As cases are known to occur on emigrant ships carrying coolies to the West Indies from Calcutta it should be possible to obtain some information as to the dates of attacks among men who had recently left the infected depots in Calcutta.—FR., I M G.]

Service Notes.

THE list of honours for the new year was a small one, but we are glad to see that a fair share of them has fallen to the Indian Medical Service.

MAJOR JOHN CHIMMIS, V C, I M S, has been given the C I E as a reward for an enormous amount of responsible work as Health Officer of the Port of Bombay during the past four plague stricken years. In the first class of Kaiser I Hind medals, we find the name of Lieut Col I S Wilkins, I M S, who, as Chief Plague Medical Officer in Bombay, has had a very trying time. We are also glad to see the name of Dr Arthur Nove of the Kashmir Mission. In the list of silver Kaiser I Hind medals, Lieut Col M L Bartholomew, I M S, Miss Alice Cothorn M D, and Major W H B Robinson, I M S, worthily represent the profession. In the list of those "who died in and from the famine," who would have been recommended for honours had they lived, we are glad to see the name of Lieut Col Archibald Adams, I M S, who, for eighteen years, served the Rajputana States.

COLONEL J H NEWMAN, I M S (retired), has been granted the special additional good service pension. He entered the service as Assistant Surgeon in September 1867, served in the Abyssinian Field Force in 1867-68, and in various appointments under the Foreign Department in Ajmere, Aha and other parts of Rajputana—from 1869 till he was appointed A M O in the Central Provinces in 1895. He officiated also in 1897-8 as Inspector General of Civil Hospitals, Bengal and afterwards became P M O of the Lahore District. He also served in the Bazar Valley in both Afghan Expeditions of 1878-9.

SURGEON GENERAL C E. McVITTIE, I M S, received the special additional pension of £350.

THE following postings have recently been gazetted in the Political Departments—Lieutenant Colonel J Crafts, M D, I M S, is posted to the Western Rajputana States, Major H N V Harrington, I M S, to Alwar, Major H C Drake Brockman, I M S, to Eastern Rajputana, Major R Shore, I M S, to be Civil Surgeon of Quetta, *sub pro tem*.

ON return from furlough, Captain T Jackson, I M S (Bo), has gone to Nasik as Civil Surgeon.

ASSISTANT SURGEON M AILSWORTH, M B, Madras, has been granted one year's sick leave

LIEUTENANT COLONEL G EMERSON, I M S, on return from furlough, has gone to Sitapur as Civil Surgeon

MAJOR W R EDWARDS, I M S, who has been on Lord Roberts' Staff in the South African Campaign, has accompanied the Commander in Chief home to England

LIEUTENANT COLONEL A R W SEDGWICK, I M S, has reverted to the Military Department. He had been on sick leave in India

THE services of the following officers are placed permanently at the disposal of Bengal—Captain E A R Newman, M B, I M S, Captain C J Robertson Milne, M B, I M S, Captain F I Waters, M B, I M S, Captain A W R Cochrane, M B, F R C S, I M S. All these officers have been in Civil Employ for several months, but were recalled to Military duty, owing to the China Expedition

CAPTAIN P F CHAPMAN, M B, I M S, is permanently appointed to the Central Provinces, as also Major J O Pinto, I M S

CAPTAIN A J MACNAB, I M S, of the Queen's Own Corps of Guides, who was only recalled from furlough a few months ago, has been granted furlough again on medical certificate for one year

LIEUTENANT E PAYNE, I M S, who has been on the Half Pay list, is permitted to retire from the Service

OWING to return from furlough of senior officer, Lieutenant Colonel Clarke, I M S, Major D T Lane and Captain C H James, I M S, reverted to 2nd Class Civil Surgeoncies

CAPTAIN W E A ARMSTRONG, I M S, has been permitted to return to duty in India

CAPTAIN JAY GOULD, I M S, M B, held medical charge of the Bundelkhand Political Agency, in addition to his medical duties, from 24th November 1900

CAPTAIN A W R COCHRANE, I M S, is appointed to the Queen's Own Corps of Guides, and to have Civil Medical charge of Hoti Mardan, during the absence of Captain A. J MacNab, F R C S, I M S, on sick furlough

CAPTAIN G G GIFFORD, I M S, goes to Trichinopoly as District Medical Officer on the return of Lieutenant-Colonel Matland, I M S, M D, to the Madras Medical College

MAJOR H HENDLEY, I M S, has left the Medical College, Lahore to take up the appointment of Medical Tutor to the young Maharajah of Patiala

THE death is announced of Surgeon General G V Currie, formerly of the Indian Medical Service who died in London on the 3rd December, at 72. He served in the Indian Mutiny Campaign against the Mohmands on the North West Frontier in 1858 in the Ensofzai and Swat Expedition of 1866, and in the Afghan War of 1879

WE understand that Lieutenant-Colonel W K Hatch, F R C S, I M S, and Lieutenant Colonel Channer have been put on the "Selected List" for administrative appointments

CAPTAIN BARRY, I M S, has been appointed Civil Surgeon of Mandalay in place of Major J H Sellick, I M S, deceased

MAJOR D T LANE, I M S, is now Civil Surgeon of Jhelum

CAPTAIN ROST, I M S, is now Resident Surgeon, General Hospital, Rangoon

A VOLUME of the Scientific Memoirs of Medical Officers of the Army of India may be shortly expected

THE P M O, Bengal Command, will during February, visit Calcutta, Dinapore, Benares and Allahabad, and in March will visit Cawnpore, Lucknow Bareilly, arriving at Naini Tal on 7th March

LIEUTENANT G KING, M B, I M S, is appointed an Officiating Medical Officer, 2nd Infantry, Hyderabad Contingent, *vice* Captain T E Watson, I M S, gone to China

CAPTAIN N W KNOX, M B, I M S, gets the officiating Medical Charge of the 6th Infantry Hyderabad Contingent, *vice* Captain E H Sharrman, I M S, gone to China

CAPTAIN W H ORR, I M S, having recently joined the Civil Medical Department, N W P and Oudh, is posted to Manipuri as Civil Surgeon

CAPTAIN C H BENSLY, I M S, joins the Jail Department of the Punjab

CAPTAIN H S WOOD, I M S, has passed the examination in Bengali

CAPTAIN F N WINDSON, M B, I M S, who was Health Officer of Simla last hot weather, goes to Netley for the Special Course this year

THE undermentioned Lieutenants of the Indian Medical Service appointed to the Commands noted against their names in G. C. O. No. 844 of 1900, reported their arrival at Bombay on the dates specified—

James Drummond Graham (Bengal)	22nd September 1900
Orthbert Allan Sprawson (Bengal)	14th " "
Maxwell Mackelvie (Bengal)	} 22nd " "
William Lapsley (Bengal)	
William Henry Cazaly (Bombay)	14th " "
Percy Alfred Browne (Punjab)	} 22nd " "
Walter Valentine Coppinger (Bengal)	
Alfred Spitteler (Bombay)	25th August "
James Charles Stewart Oxley (Punjab)	} 22nd September "
Henry Richard Maenece (Punjab)	
Leonard Joseph Montagu Dias (Punjab)	
William Mitchell Houston (Bombay)	
George Joseph Grafton Young (Bombay)	
James Good (Madras)	
Alexander Chalmers (Madras)	
William Gavin Hamilton (Madras)	
Samuel Robert Godkin (Madras)	

A CORRESPONDENT has sent us clippings of several articles on present conditions in the Indian Medical Service. There can be no doubt that they fairly represent the feelings of a large number of Medical Officers

The question of the present state of the Service is receiving attention from the Government of India, and we believe there is no intention of allowing it to drift into the state of the R A M C

We are inclined to believe that, unless unforeseen difficulties occur, changes will be made which will have the effect of improving the I M S in many respects

A CORRESPONDENT writes to us from Bombay, protesting against the present moss waistcoat of the I M S uniform. We quite agree with him that it is not satisfactory. What is wanted is the moss waistcoat to be low cut, and to be worn with a collar and tie, as in Infantry Regiments

LIEUTENANT COLONEL G. M. GILES, F.R.C.S., M.B. (London), I.M.S., has been permitted to retire. A second edition of his book on "Mosquitoes" is being prepared

THERAPEUTIC NOTES

MESSRS BURROUGHS, WILCOX & CO have kindly supplied us with specimens of their **Liver Tabloids**, which we have used recently with great and immediate success in four cases of night blindness. These liver tabloids are perhaps the most elegant method of treating this condition with liver

The same firm's **Tabloids of Calomel** are thoroughly reliable, and made from pure sublimed mercurous chloride and form a very agreeable way of administering this drug. Their **Tabloids of Bismuth, Rhubarb and Soda** (compressed) are also elegant preparations

Guaiacol in Fevers—Guaiacol possesses strong antipyretic powers. In fever it is perhaps best used by painting over the skin of the abdomen, the chest, or the internal aspect of the thigh, 30 or 40 drops being used for this purpose. These applications may be repeated. The decline in temperature is often great and rapid, but after reaching the lowest point the temperature will more rapidly attain its former height. A great feeling of depression is experienced by the patient and profuse sweating occurs. The temperature has reached the minimum, and chills at this time are not uncommon. The use of this drug for its antipyretic effect is not devoid of danger, and its action is not as lasting as that produced by the cold bath and by numerous other antipyretic remedies. Guaiacol carbonate has been used in typhoid fever, for its antiseptic action in the bowel, but such use is not to be advised.—G. SUMNER WITHELIUS, in Sajous's "Annual of Practical Medicine."

Treatment of Epistaxis—Rango (*Wiener medizinische Blätter* August 17th) calls attention to the fact that the source of hemorrhage is almost always quite limited and situated well forward. When this is the case, compression suffices to stop it. In addition, one may inject a 5 to 10 per cent solution of gelatine in artificial serum, or apply tampons wet with such a solution. If it is found necessary to plug the posterior nares, the tampon should not be left in place for more than twenty-four hours.

Hæmorrhoids—The following is often useful for hæmorrhoids—

R Compound Tincture of Camphor 1 drachm
Camphor 1 "
Belladonna ointment 2 ounces

M To be applied directly to the painful part

Atropine in Serous Diarrhœa of Nurslings.—The following has been recommended—

R Sulphate of Atropine ʒ of a grain
Distilled Water 450 grains

M From one to three drops may be given, but the general condition must be closely watched, and three drops must not be exceeded

A Lotion for Diabetic Pruritus Vulvæ—Lutaud (*Journal de Médecine de Paris*, June 10th) gives the following formula

R Boric Acid 750 grains
Sodium Bicarbonate 75 "
Distilled Water 1 quart.

Neuralgia—

R Menthol 15 grains
Cocaine 5 "
Chloral Hydrate 3 "
Vaseline 1 drachm

M To be rubbed gently over the seat of the pain.—(Practitioner)

To retain Nutrient Enemas—The instillation of a few drops of a 3 per cent solution of cocaine into the rectum by means of a medicine dropper has been recommended in order to aid a patient to retain an enema when it is given with that object in view, by this procedure the sphincter is partially anesthetized for a period of twenty to thirty minutes

Crusts and Fissures of the Nostrils—

R Unguenti hydrarg ammon
Vaseline, aa oz. ʒss 10
Zinc oxide gr lxxx 5
Plumbi acetatis ʒr 1/4 015

M Sig For external application night and morning
—(Practitioner)

CORRIGENDUM—In the article on Medical Progress in Bombay (January No., p. 24) in line 13 for 3,000 rupees read, of course, Rs. 30,000

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

Communications on Editorial Matters, Articles Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co., Calcutta

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co., Calcutta

Annual Subscriptions to the *Indian Medical Gazette* Rs. 12, including postage

BOOKS, REPORTS, &c, RECEIVED

McBride's Diseases of Nose Young J. Fentland
Cells Malaria, Longmans Green & Co
Goodshall and Miles Diseases of Rectum Longmans, Green & Co
Revue Internationale de Therapie Physique Rome
Lieut. Col O'Connell R.A.M.C. Ague or Intermittent Fever
The Transactions of Bombay Medical and Hygienic Society
The Transactions of S. I. Branch British Medical Association
The Report of the Sanitary Commissioner with Govt. of India, 1899
Ogden on the Urine W. B. Saunders & Co., Philadelphia
Physiological Hygiene W. B. Saunders & Co., Philadelphia
Atlas of Diseases Caused by Accidents W. B. Saunders & Co
Atlas of Gynecology W. B. Saunders & Co
The Two Reports of the Royal Society on Malaria.

COMMUNICATIONS RECEIVED FROM—

Lieut. Col G. M. Giles I.M.S. Shahjampur Messrs W. B. Saunders & Co., Philadelphia Capt. S. P. James I.M.S. China Capt. N. P. O. G. Lator I.M.S. China Capt. W. G. Lister I.M.S. Ellichpur Lieut. Col W. K. Hatch I.M.S. Bombay Major H. Herbert I.M.S. Bombay Lieut. Col M. O'Connell R.A.M.C. Peshawar Capt. Clomasha, Ranchi Major F. P. Maynard I.M.S. Patna Major D. M. Moir I.M.S. Chittagong Major C. E. Sunder I.M.S. The Asst. Secy., Royal Society London Mr P. J. Froyer, London The Asst. Secy., Royal Society Capt. W. D. Sutherland I.M.S. Frankfurt Major R. Rose, I.M.S. Liverpool Dr D. F. Keegan, London Major D. G. Crawford I.M.S. Hooghly Major E. Roberts, I.M.S. Simla Major P. W. O'Gorman, I.M.S. Lyallpur, Capt. Fearnside I.M.S. Rajahmundry, Major R. H. Charles I.M.S. Calcutta, Capt. C. R. Stevens, I.M.S. Bhangalpur, Dr A. Newsholme, D.F.H., Brighton, Mr Reg. Harrison, London.

Original Articles.

ON THE VALUE OF THE SERUMS OF THE RUSSEL VIPER AND THE COBRA, AS ANTIDOTES TO THE VENOMS OF THOSE SNAKES

BY R. H. ELLIOT, M.D., F.R.C.S.,
CAPTAIN, I.M.S.

I FEEL that some apology is due for the publication of a paper which, at the best, is only a fragment, but it seems a pity to throw away the work of months, because one has been unable to bring it to that completeness one would have desired. Circumstances over which I have no control, prevent me from continuing this line of investigation for the present, and it may be long before the opportunity to take up the thread again presents itself. I have, therefore, decided to avoid theoretical questions, as far as possible, and to limit myself to a publication of the tables with short comments on each.

The original scheme for these experiments contemplated an estimation of the antidotal power of the serums of venomous snakes as exhibited against the venom of the snake from which the serum was derived, followed by an estimation of the value of the serum of one poisonous snake for the venom of another species, it was then proposed to work out the value of the serums of non-poisonous snakes and of mongooses.

Unfortunately only a small part of the programme has been carried out up to the present.

Of the many imperfections of the work, I am all too conscious, if, however, the lenient reader should by chance find therein aught that seems of suggestive value, I would ask him to credit that to Edinburgh's distinguished pioneer in the field of snake venom research, whose address delivered at the Royal Institution of Great Britain on March 20th, 1896, first suggested the lines on which this research has been conducted.

METHOD EMPLOYED TO SEPARATE SERUM FROM SNAKE'S BLOOD

With the above end in view, a number of different methods have been tried, and of them all, the following has been found to work best—

The snake is rendered unconscious by placing it in a box, into which pledgets of cottonwool soaked in chloroform are dropped through an aperture, specially made for the purpose, from time to time the box is shaken, and when all active movements inside have ceased, the lid is raised, and the animal's neck is seized close behind the head with a pair of strong forceps, about 2 ft long, with these forceps the reptile can be quickly and safely removed to the operating table, provided that care is taken to get

a good hold of the spinal column and not to be satisfied with a skin-grip, the neglect of this precaution in one of the earlier experiments nearly involved serious consequences, a good and convenient form of operating table is a large deal box, standing about 32 inches in height. On to one of the vertical sides of this box, the snake's head is nailed, ventral surface upwards, at such a level that the junction of the head and neck corresponds to the top of the box, the snake's body lying on the upper surface of the box, and the tail being entrusted to an assistant to hold. It is important to use a long nail for the head, as during the process of nailing down, the snake erects its fangs, and expels poison. Owing to the want of this precaution the writer received, what might have proved a very serious wound on one occasion, his thumb slipping down from the nail and becoming impaled deeply on one of the fangs. In order to eliminate this source of danger, a nail 6 inches long, and brought to a fine point at the end is now used for fixing the head, the fangs are next nipped off with bone forceps and removed.

The reptile lying ventral surface upwards, a median vertical incision, two inches long, is made, terminating half inch above the angle of the lower jaw, the skin flaps are carefully dissected back, and held outwards in the grasp of sterilised catch forceps, the left cervical vein, which is constantly the larger, is now dissected up from all its connections for a length of an inch or more, a pair of pressure forceps are applied on the distal side, as close to the head as possible, and the vein is cut clean across with sharp scissors just on the central side of the forceps, the jet of blood is directed with the aid of the forceps into a sterilised glass vessel kept ready for the purpose. The assistant in charge of the tail now raises it, and with it the body into a nearly vertical position, thus rendering the nailed-down head the lowest part of the animal.

The blood readily runs out and fills the tube, and so thoroughly does this process drain the body, that it is but seldom any advantage to cut across the left vein, or to open the body and repeat the manoeuvre on any of the other veins of the animal.

It is most important not in any way to disturb the blood once drawn, and it is, therefore, advisable not to mix the blood from different animals, but to keep each in a separate tube, otherwise a clear serum is not obtained, but one stained with hæmoglobin.

Each tube is next covered with several folds of cloth, which has been boiled in 1-20 carbolic lotion, and is put away in the dark for 48 hours, at the end of which time the serum has been separated, and can be decanted off into sterilised tubes belonging to a centrifugal machine.

Any remnants of fibrin floating in the serum are soon driven to the bottom of the tubes by

brisk centrifugalisation, and the liquid is ready for injection. It is hardly necessary to state that every manipulation is carried out with strict attention to the maintenance of antiseptics.

METHODS OF EXHIBITING THE SERUM

These may be divided into three main classes —

(a) Those in which the venom was mixed with the serum *in vitro*, and the mixture injected.

(b) Those in which the serum was injected first, and later, after an interval, the venom followed.

(c) Those in which the venom was first given, and then later on the serum followed.

It will be at once observed that while method (c) is the one which most nearly approximates to our method in the exhibition of an antidote in cases of snake-bite, the other two methods will more readily show the influence of feeble antidotal powers should these exist.

Again while method (a) invites success, if the antidotalism sought for is presumed to be a chemical one, we should expect the results to be in favour of method (b) on the presumption of a physiological antidotalism existing.

All these methods have been tried as will be seen.

In most of the experiments the serum has been used subcutaneously, but the intravenous mode of administration has also been given a trial. Of the latter method I shall have nothing to say at present, as my results with it have been very unsatisfactory, doubtless owing to errors which I shall in time learn and avoid.

DABOIA VENOM AND SERUM

Brief notes on Table A—The first five experiments in this series are instructive. They point strongly towards the conclusion that the serum of the Daboi, when mixed with the poison of that snake, exercises a distinct antidotal action. It will be observed that the dose of venom chosen was sufficient to cause the death of a rabbit in under 14 hours, against this lethal dose, 1 c.c. per kilo of serum proved of no avail, 3 c.c. enabled the animal to live 24 hours, 5 c.c. prolonged life three days beyond this period, and 7 c.c. seemed as if it were going to save the subject, which died, however, on the eighth day.

The consistency of these results throughout the series is worthy of notes.

The next four experiments are equally instructive. It will be noted that with the raised dose of venom, the control succumbed in $4\frac{1}{2}$ hours, while the animals treated with the antidote lived much longer periods, the rabbit which received 3 c.c. living $16\frac{1}{2}$ hours, that which received 5 c.c. living 36 hours, and that which received 7 c.c. living $26\frac{1}{2}$ hours.

In experiments 10 and 11 we find the animal which received 2.5 c.c. surviving altogether, a dose similar to that which the animals 1—5 received.

No reasonable doubt is here left that the influence of the serum was distinctly, though by no means powerfully, antidotal, under the conditions of administration after admixture.

Notes on Table B—The first six experiments of this series speak for themselves. The serum used was an excellent sample, and the brief notes recorded show the most decided increase of antidotal effects as the dose of serum was raised.

Attention is also drawn to the note which precedes the last two experiments of the series. I would not have ventured to make the observation there recorded, had it not been the outcome of indications frequently repeated. It may be asked, why under the circumstances one ever uses stained serum, the answer is a simple one, *viz.*, that an absolutely clean specimen of snake serum is difficult to obtain, even when the greatest care is taken. Let anyone who doubts this try for himself.

Notes on Table C and D—The value of Table C is very seriously diminished by the fact that the series was unfortunately uncontrolled. The consistency of the results as evidenced by the order in which the animals died, and by the survival of those with large doses of the remedy, leads me to publish the series in spite of the drawback above-mentioned.

In comparing these results with those in Table A, it is to be remembered that fowls are much more resistant to the action of venom than rabbits are. With these remarks the table may be left to speak for itself.

Table D is very suggestive. On the one hand, it indicates decided, though feeble protection on the part of the serum when administered subsequently to the injection of the venom, and, on the other hand, it suggests that large doses of serum act less advantageously than small ones. I offer no explanation.

An allusion has been made in the notes on Table B to the fact that when using blood stained serum, I have noticed that though the antidotal power of the fluid is not definitely destroyed, there seems to be added an element of toxicity from the serum itself. This observation has been so often made by me that it seems to call for some explanation. I offer one tentatively only, and with much diffidence, for I feel that the work is far too incomplete for dogmatism. It seems possible, either that the blood pigments of serpents' blood are themselves poisonous, or else that there escapes into the blood along with the pigment some noxious substance or substances. The relation of such substances to the antidotal constituent or constituents of the serum I am not prepared at present to discuss.

The interest of the above observations centres in the fact that while Professor Calmette declared the blood of poisonous snakes to be itself poisonous, Professor Fraser was the first to

discover that the serum of these serpents had distinct antidotal powers

Several other series were undertaken on the same lines as the experiments shown in Tables C and D, but as the results of these were for one reason or another inconclusive, it does not seem worth while to publish them.

Finally a comparison between Tables B and C is worth making. The advantage of administering the serum before the remedy is here indicated in the fact that whereas 3 cc of serum failed to save the fowl, which had received its dose of venom half an hour beforehand, the same dose proved protective when given two and a half hours before the poison. The notes record that the fowl showed but little sickness, and that only for two or three days.

A still more striking proof is found when we come to compare the fowls which received only 2 cc. of serum each. Here we find that the bird in whose case the poison was given the start, died in less than 16 hours, while that in which the remedy was given beforehand recovered, though decidedly sick for three days.

It is to be greatly regretted that Tables A and B do not admit of similar comparisons, the change of subjects from rabbits to fowls was forced on me by the supply of the former animals running short.

Notes on Tables E and F.—In view of what has been written in the notes on Daboia serum, it would be superfluous to write much here. The tables are published, and inasmuch as they support the results obtained with Viperine serum, they may be considered to be not without interest.

The first series of Table E, consisting of six experiments, is suggestive owing to the consistency of the results, the uniformity of protection being only broken by experiment four, this slight deviation may be due to the idiosyncrasy of the animal, or possibly the rabbit may have been unwell, and this fact has been in some way overlooked.

Experiment seven shows a measure of protection with the anticipatory administration of 4 cc of serum.

Table F is very fragmentary, but it is not devoid of suggestive interest.

General Deductions.—It seems clear that the serum obtained from the blood of venomous snakes is, when obtained pure, antidotal in its properties. The antidotal power possessed does not, however, appear to be of a sufficiently high order to warrant the hope that the blood of these dangerous reptiles will yield a fluid of commercial value as an antidote to snake-bite, unless means are found of separating the antidotal constituent from the serum. More than this I am not at present prepared to say.

In closing this paper, I would tender my thanks to the many medical men and laymen who have given me much useful and ready help.

TABLE A

Experiments designed to ascertain whether Daboia serum (fresh) is an antidote to Daboia poison, when the two are mixed and injected subcutaneously.

The strength of the solution of venom used was 001 grm per cc of freshly boiled, cooled water, the solution of venom was mixed with the dose of serum before injection, the two were drawn up into the syringe and injected into the flank of the rabbit used.

Dec	Wt in kilos	Dose per kilo	REMARKS
1 18th	61627	003 grm venom	Control, died in between 6 and 14 hours, found dead in the morning
2 18th	58796	003 grm venom 1 cc serum	Died in between 6 and 14 hours, found dead next morning
3 18th	58089	003 grm venom 3 cc serum	Died in 24 hours
4 18th	61627	003 grm venom 5 cc serum	Was sick for a day, then improved, got convulsions on 22nd, and died four days after injection
5 18th	6729	003 grm venom 7 cc serum	Was sick for a day, then got better and seemed well on the 5th day after injection. Died on 8th day
6 18th	9008	004 grm venom	Control, died in 4 hours 15 minutes
7 18th	99878	004 grm venom 3 cc serum	Died in 16 hours 15 minutes
8 18th	9888	004 grm venom 5 cc serum	Died in 36 hours
9 18th	8146	004 grm venom 7 cc serum	Died in 26½ hours

Another short series similar to the above

Dec	Wt. in kilos	Dose per kilo	REMARKS
10 20th	9076	003 grm venom	Control, died in 13½ hours
11 20th	9847	003 grm venom 25 cc serum	Recovered

TABLE B.

Series of experiments on fowls to ascertain whether the previous injection of doses of Daboia serum, protects an animal against the injection of lethal doses of Daboia venom under the skin.

NOTE.—All these experiments were performed on December 21st, 1899, the serum was given about two and a half hours' start, it was injected into the muscles and subcutaneous tissue, the poison was injected in every case into the subcutaneous tissue under the wing, a position which had not been used for the injections of serum. No obstacle to the absorption of the poison could thus have been offered.

Weight in kilos.	Dose per kilo	REMARKS
1 .921	003 grm venom 6 cc serum	Control Died in 21½ hours

Weight in kilos	Dose per kilo	REMARKS
2 75092	003 grm venom 5c c serum	Was never really sick, the wound caused by the injection threatened to slough Recovered
3 94928	003 grm venom 4c c serum	Sick for one or two days Recovered
4 93512	003 grm venom 3c c serum	A little sick for 2 or 3 days Recovered
5 82175	003 grm venom 2c c serum	A little sick for 2 or 3 days Recovered
6 86427	003 grm venom	Decidedly sick for 3 days Recovered

The serum used for the above fowls was a clear straw colour, a little blood stained serum was left over, which was used for the next two experiments, and the results strongly suggest that the serum whilst it protected against the venom was in itself innocuous

Weight in kilos	Dose per kilo	REMARKS
7 10620	3c c. serum 003 grm venom	Died in 67 hours
8 10413	8c.c. serum 003 grm venom	Very sick from the first, died on the fifth day

(To be continued)

THE SURGICAL TECHNIQUE AND OPERATIVE TREATMENT OF ELEPHANTIASIS OF THE GENERATIVE ORGANS BASED ON A SERIES OF 140 CONSECUTIVE SUCCESSFUL CASES

By MAJOR R. HAVELOOK CHARLES, I.M.S.,
M.Ch., F.R.C.S.I

PROFESSOR OF SURGICAL AND DESCRIPTIVE ANATOMY
AND CLINICAL SURGERY,

Surgeon, Medical College Hospital, Calcutta

It is possible that to some certain of the points touched on may seem unnecessary and self-evident, but, as this is written for Surgeons, both European and Indian, commencing the

operative treatment of the disease, I have thought it best to be clear at the risk of being verbose. My experience as a teacher for many years has shown me that senior students and those beginning practice more often fail in attention to detail than in the greater things necessary! "*Haud ignara mali miseris succurrere disco*"

In January 1897 I read, before the Calcutta Medical Society, a paper on "a new method of operating in Elephantiasis Scroti," publishing then the results of a series of 60 consecutive successful cases. Since then I have operated on a further series of 80, thus completing 140 consecutive cases without a death.

This more extended experience has led me to modify certain of my original methods, and, as I have received letters from various surgeons interested in such operations, asking for details, I venture now to bring the subject again before the profession.

The operation being one of expediency, necessitates the most scrupulous attention and care to technique and treatment, as a fatal result is more to be deprecated than in conditions of surgical emergency.

THE CHARACTER AND CONDITION OF THE PATIENTS

that have come to me for relief have differed much.

In age they have varied from 16 to 62 years. Some had health in good store, in others the shattered frames, worn with digestive troubles, showed livers and spleens enlarged from malarial cachexia. In appearance the pendulum has swung from the emaciated famine type to the individual with pendulous belly and elephantine gait.

The lymphatic glands in the inguinal and femoral regions were very frequently enlarged, though examples of the spongy condition were rare—solid hypertrophy being the rule.

Heima complicated the operation in instances. In one interesting case it was of the irreducible variety, and from it over a pound of omentum was removed. Several of the patients had also elephantiasis of the arms, or legs, and some of both.

The following are the—

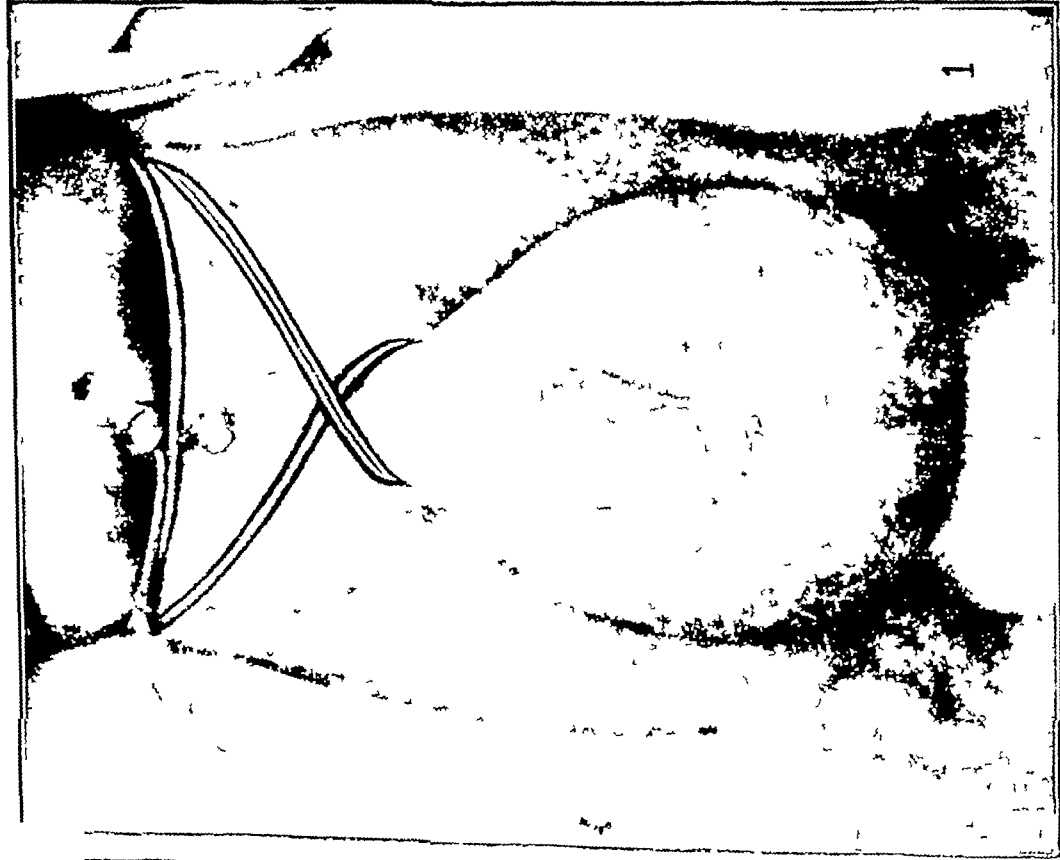
ORDINARY FORMS OF THE DISEASE AS MET WITH

a The hard and solid type of elephantiasis is shown in Photo No 3

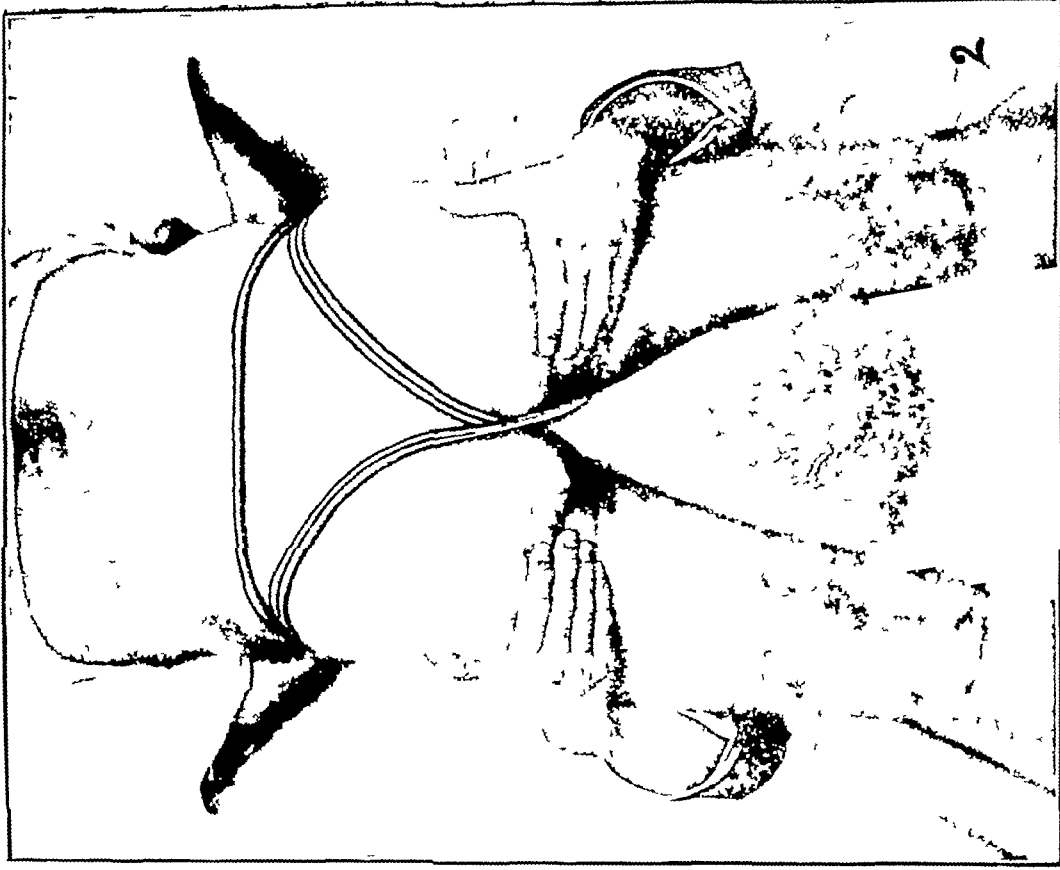
b The mixed type—hard but not solid, as it contained two hydroceles—is shown in Photo No 11

c The type with very large hydroceles and thickening of the lower part is shown in Photo No 10

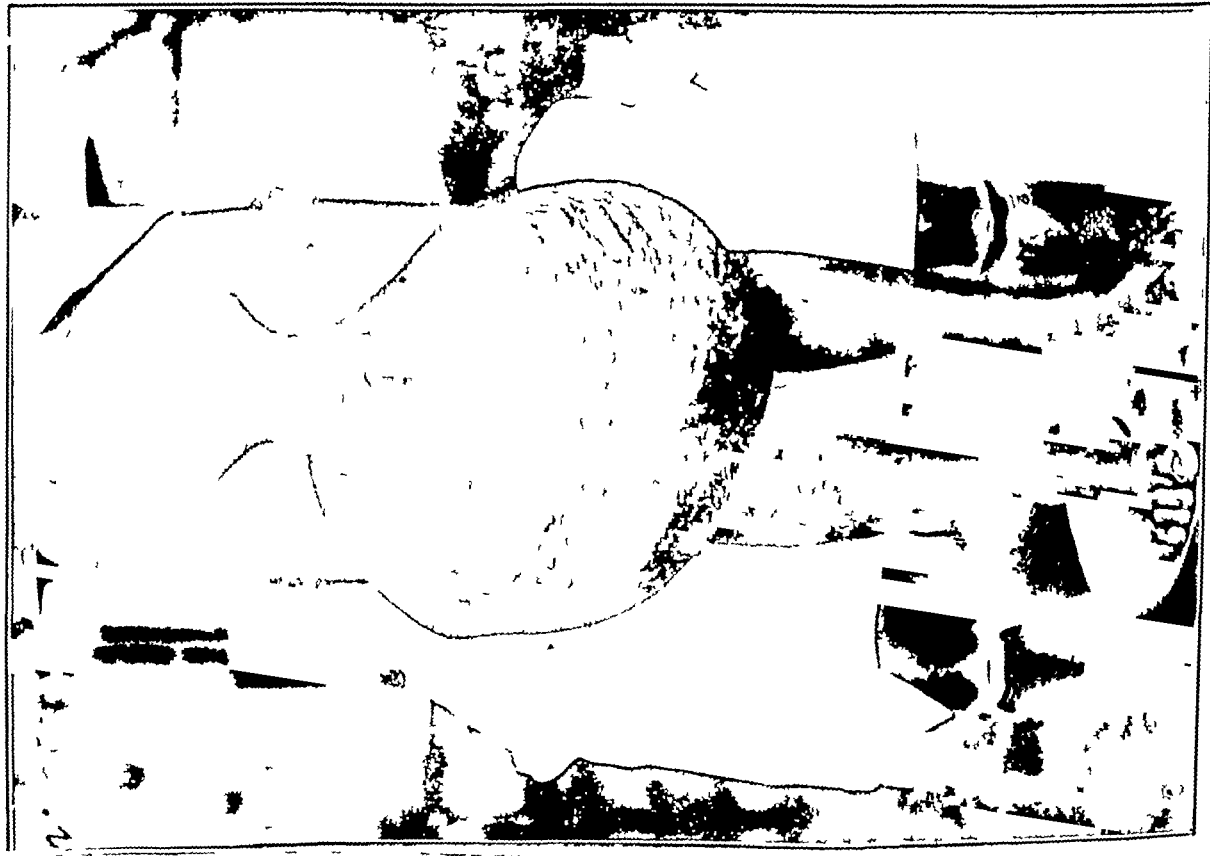
d Elephantiasis affecting merely the coverings of the penis is shown in Photo No 9. The scrotum was healthy in this



No. 1 Showing manner of application of the Rubber Tourniquet from the front (This patient was 62 years of age, with large Right Inguinal Hernia—Operation successful)



No. 2 Back View of No. 1



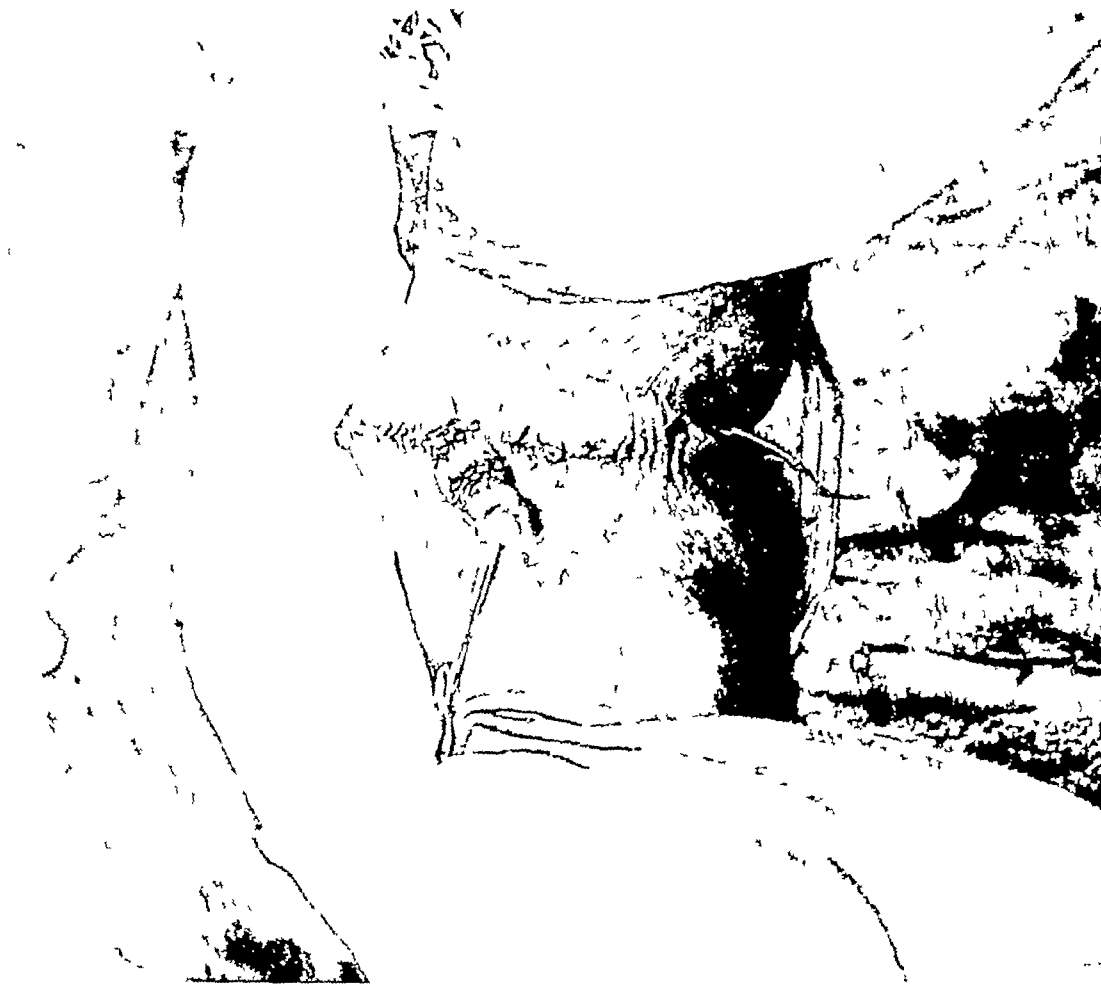
No. 9 Solid form of Elephantiasis. See for steps of operation in this case Fig. 4 5 6 7 8



No. 4 Tumour thrown down still attached below. Firm connections of Testes require division—all other parts of Testes and Cords separable by finger



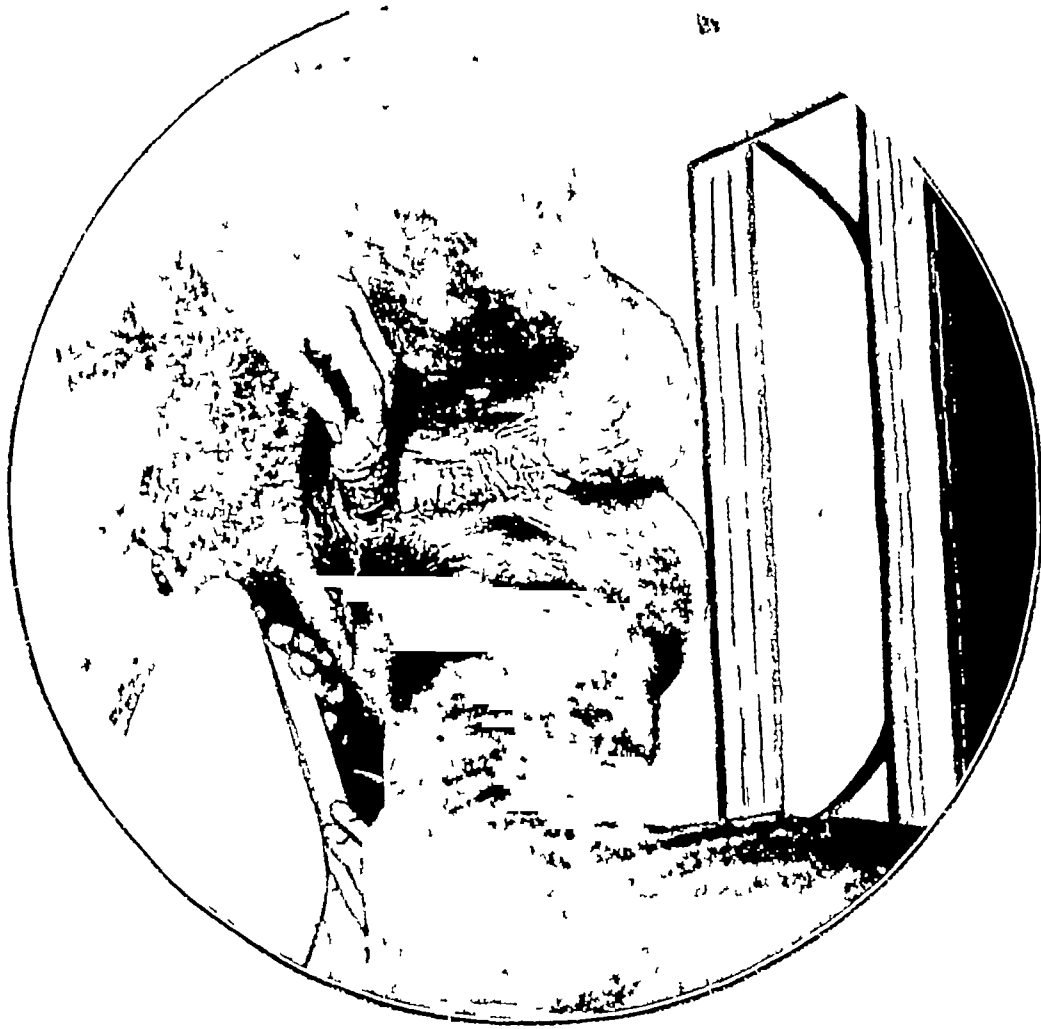
No 5 Field of Operation on complete removal of Tumour in No 4



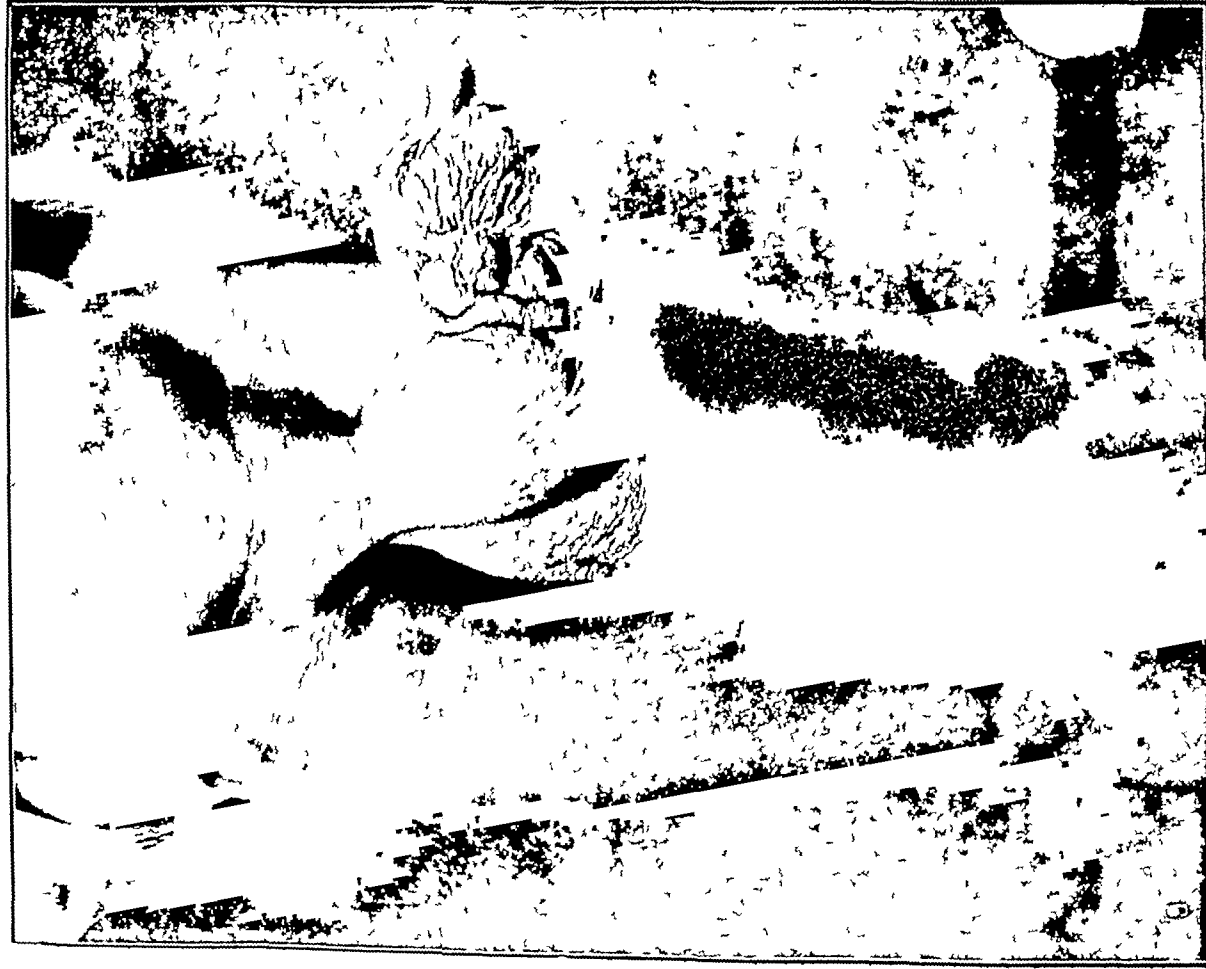
No. 6 Wound covered in by Flaps from Thighs Base of Penis also closed over by the same small reflection of healthy lining of Prepuce from Cervix



No 7 Patient resting on "Bandaging block" which is under his Sacrum Bandage applied



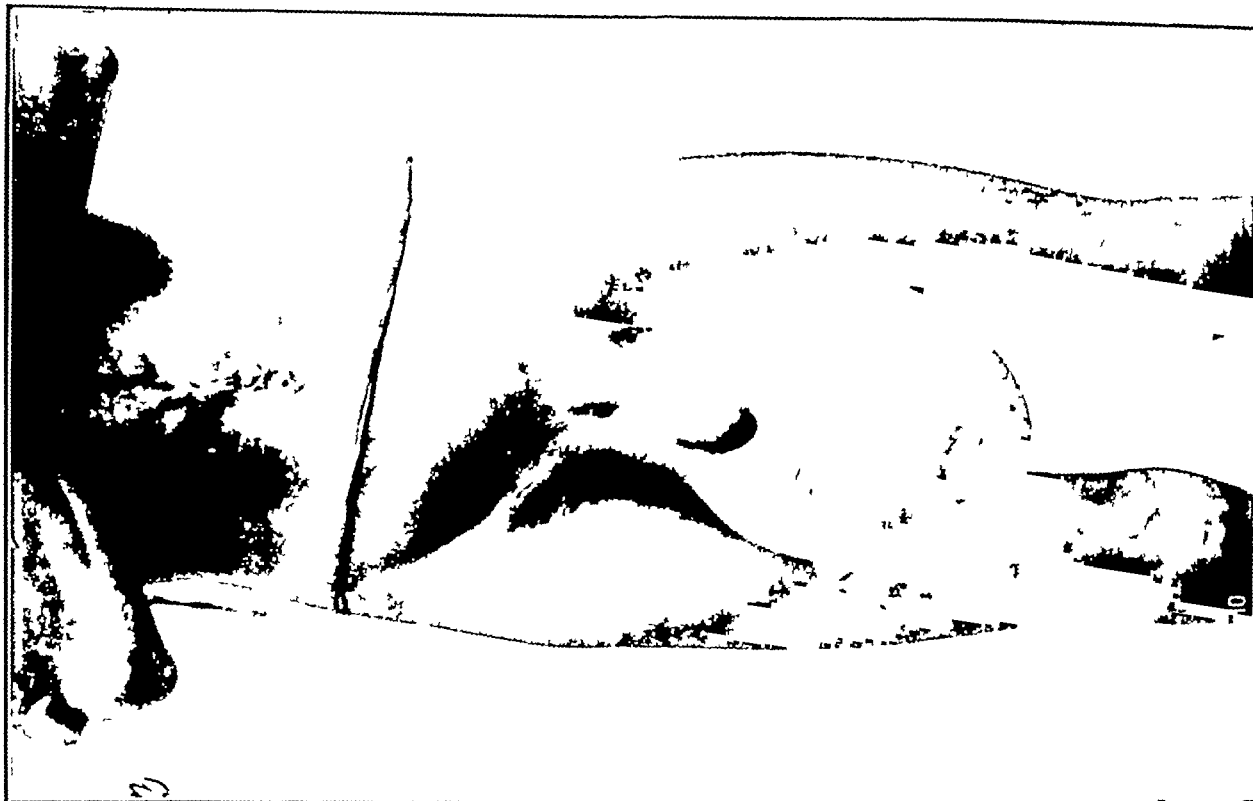
No 8 First Dressing Six days after operation Flaps taken well Wound aseptic



No 9 Good case of Elephantiasis of the Penis Scrotum healthy



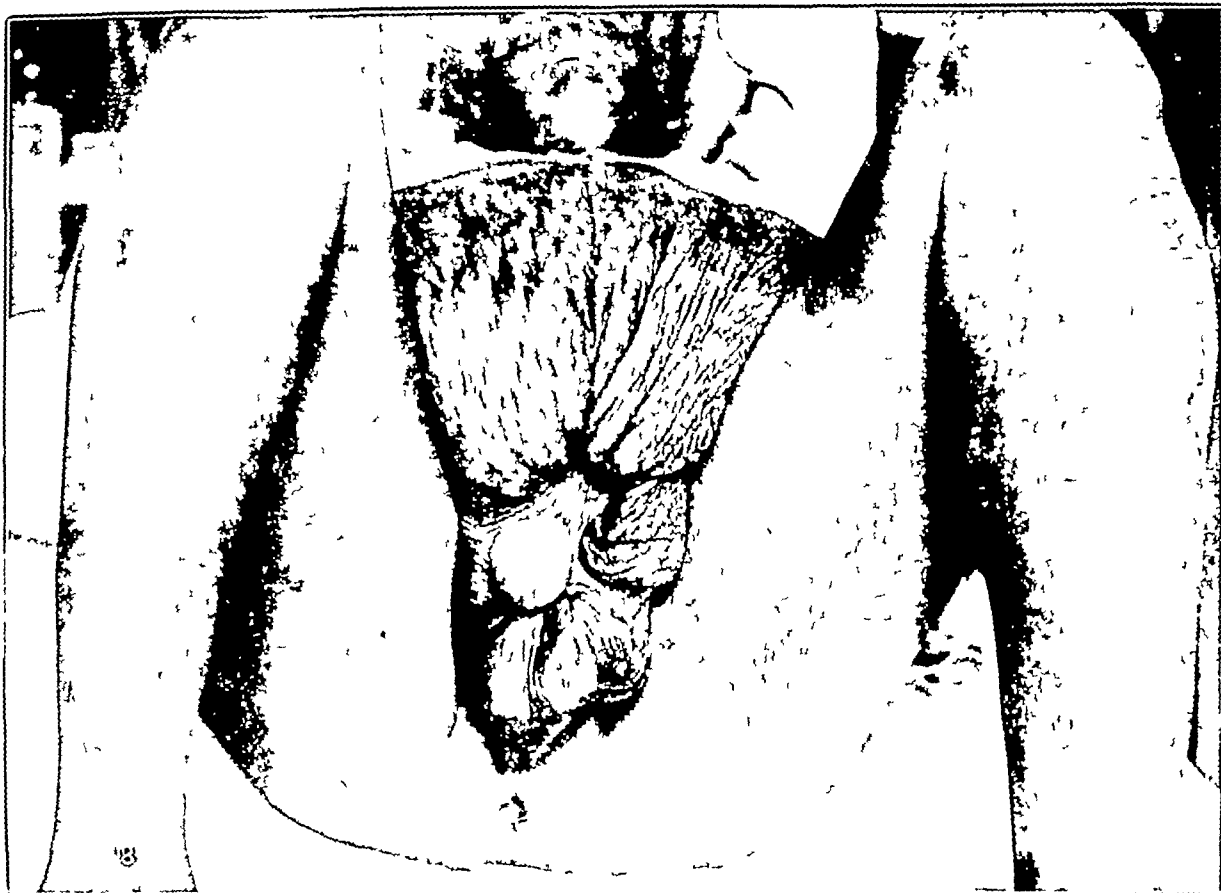
No 10 Elephantiasis Complicated with Double Hydrocoele Cords very long



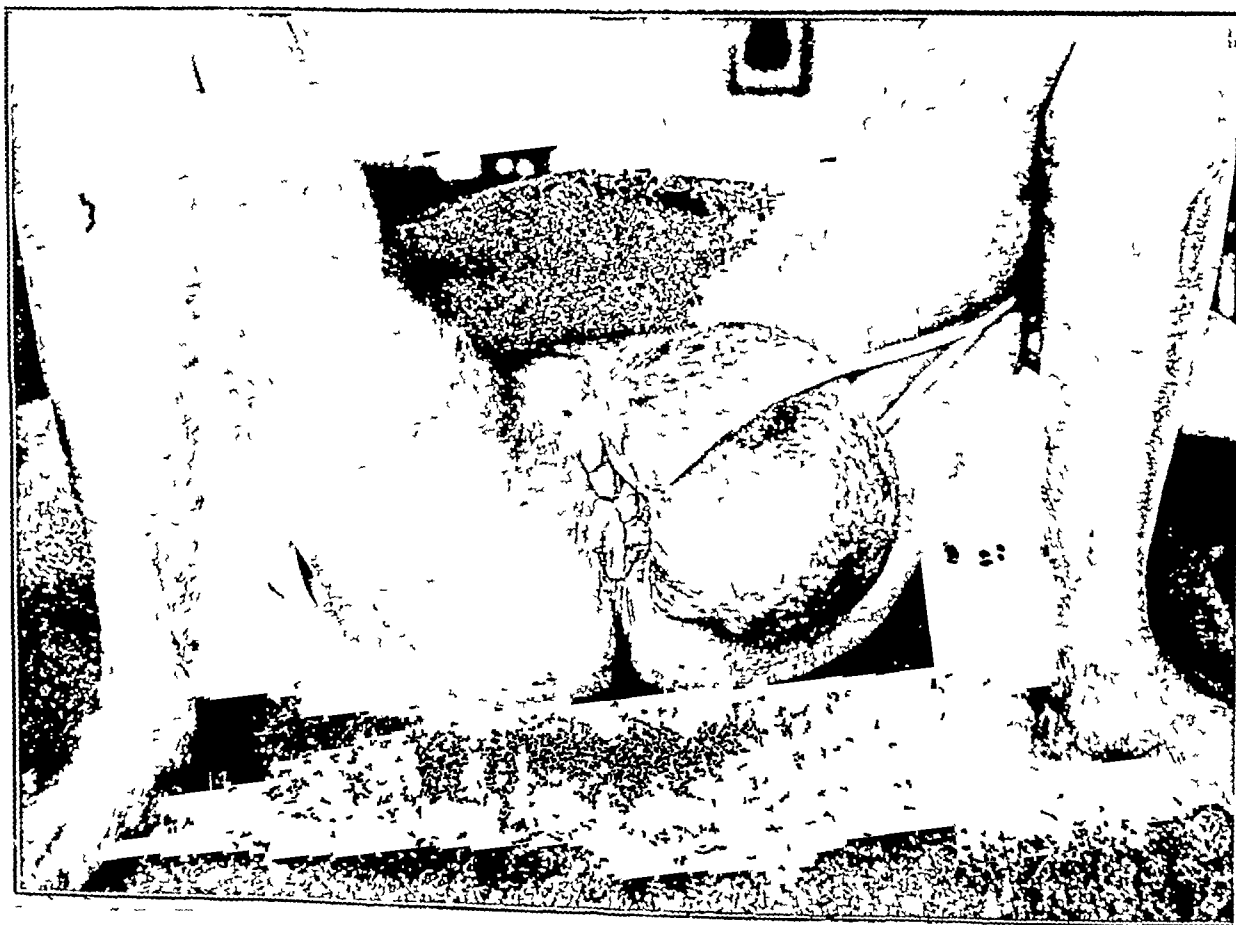
No 11 Hydrocele followed by Elephantiasis (lower part of Scrotum)



No 12. Case of Recurrence in a case operated on 20 years ago Shows the binding down of Penis by Cicatricial band Cured by my operation



No. 13 Case of Recurrence in a patient operated on 15 years ago Shows binding down of the Penis by Cicatricial bands common in the old method of operating Cured by my operation





No 15 Elephantiasis of the Coverings of the Clitoris



No 16 Elephantiasis of the Left Labium Minor



No 17 Elephantiasis of Left Labium Minor and Coverings of Clitoris

THE GENERAL PREPARATION OF THE PATIENT FOR THE OPERATION

From what has been noted about the great variety of patients coming for treatment, it will be understood that the preparation of the case is of the first importance if a successful issue be ever regarded as the *sine quâ non*.

The routine pursued by me is that the individual first has a hot bath, and is provided with a comfortable bed with plenty of warm clothing. Especial attention is then directed to calming the mind of the restless, excited and nervous. Removal of causes of worry, fear or anxiety, I reckon as of great use, hence such a patient is placed near, or with others, that have been operated on. This explains to such the unknown, and gains the confidence of the afflicted one. The appetite is studied, and food, as may be judicious, is given—the nurse being instructed to see how the food is eaten. Concurrently, the microscopic investigation of the blood is being prosecuted for *filariæ*, and the usual examination of the urine and stools is carried out. In the bloated and obese the abdominal plethora is combated, and in the emaciated and cachectic anemia, fever and spleen are corrected.

THE LOCAL PREPARATION

A daily hot hip-bath and a thoroughunction of the parts, which have been shaved, with a creamy lather of coal tar soap, improves the nutrition of the tissues—œdema, harshness and irritation of the skin adjacent subsiding.

When eczema or ringworm, which are common complications, are present, Lin Iodi, or Ichthyol, brings about a cure.

SPECIAL PREPARATION FOR THE OPERATION

Having determined that the patient is in the best condition possible under the circumstances for the operation

On the day previous

A purgative is given in the morning, followed by a good enema at night.

The parts being re-shaven, are washed with 1-20 carbolic lotion, and a lather of carbolic soap (20%), then rubbed with turpentine, and again washed with perchloride lotion (1-1500). Lastly, a dressing of perchloride gauze, wrung out of 1-20 carbolic lotion being applied, is confined with a bandage.

On the morning of the operation

The parts are again, washed and the routine of the day previous repeated.

The patient is then carried in his bed to the operating-room—due attention being paid to the avoidance of chill. When he is placed on the operation-table he is clothed in a flannel shirt, with long stockings on his legs, and he lies on a thick blanket which extends from his sacrum to his neck.

Position of the patient

The patient occupies the lithotomy position at the end of the table. The assistants hold him in such a way that the thighs can be abducted or adducted, or, the pelvis tilted up as required, according to the various stages of the operation. (Assistant, to right of patient, grasps the inside of patient's knee with his left hand and the dorsum of the foot with his right hand—the knee is well flexed and the foot well abducted. The assistant to the left of the patient grasps the knee with his right hand and the foot with his left hand.)

Intelligent assistants, holding a patient well, greatly facilitate the steps of the operation. With efficient aid there is thorough control, and it is possible to avoid every source of soiling or contamination of the field of operation—so essential if the wound is to run an aseptic course.

I consider this position is superior to having the patient supine on a table. It not being possible, in the latter, to be assure of continued surgical cleanliness during the lengthy period of the operation, and, more especially, the satisfactory making of the flaps in the supine position is less easy.

It may seem absurd in my drawing so much attention to keeping the patient's back warm, but, experience has taught me, in these days of glass operating tables and other failures of surgical millinery, that the subject of the operation is frequently given credit for greater powers of endurance than the results sometimes justify. A temporary congestion of the viscera of a man, from lying with his back improperly protected on a cold table for an hour, will turn the scale against him should his life be in the balance from innate debility, operative shock, or other complication. A percentage of the mortality in this surgical procedure I am convinced is due to some neglect of ordinary guiding principles.

THE OPERATION

The Rubber Tourniquet

In most of my cases I have used the rubber cord— $\frac{1}{4}$ " thickness—applied in the manner shown in Photos Nos 1 and 2, which, better than letter-press, illustrate its application. Lately I have not employed any such appliance, but, proceeded with the incisions—picking up the vessels before cutting or immediately afterwards.

The advantages of the rubber-cord are—that

1. When the operator meets with these cases at first, it gives him confidence to know that the circulation is under control.

2. Less blood is undoubtedly lost at the early part of the operation, so in cases, where a few ounces of the fluid may be of vital importance, it is advisable to use the tourniquet.

Its disadvantages are—that

1. When the mass of the tumor, on the neck of which it rests, has been cut away, the cord may slip over the wound and introduce thus elements of septic danger

2. If it can be done without the operation is simplified

3. Its removal subsequently requires care to prevent the ends touching the recent wound and the operator soils his hands if he carries out the unwinding himself. An untrained assistant will probably make a muddle of the simple act! *Experientia credit*

4. Of much more importance is the fact that the "weeping" from the large surface is less and the blood stasis more perfect, if the cord be not used. The wound can be closed without delay, saving valuable time, so that the patient is got comparatively soon off the table into his bed.

Let the surgeon, who has fingers, and only one thumb, on each hand, get rid of an inordinate fear of blood, operate quickly, *without hurry*, bear in mind where the vessels are to be found, and, with the exceptions noted, he will relegate the cord to the limbo of obscurity, to be used by those who still have, metaphorically speaking, to cut their surgical teeth.

The Assistants

In addition to the two, holding the patient, and one in charge of the navigator, another, with clean hands, is all that is required. I prefer also he should bear in mind that "they also serve who only stand and wait." The operator must learn to carry out his work without assistants—having placed his instruments conveniently to his hand, he should do everything without dependence on those standing round, carrying on his duties "*cito, tuto, et jocunde*." The fourth aide will hold the penis when told, or steady the mass of the tumor, or catch a forceps, but, the only hands in the wound are the operator's.

Incisions

The first I make is in the median line, from near the pubis to the preputial mouth. This is deepened to the dorsum of the penis and the finger is run up and down on either side of its body, very effectually enucleating the organ from the suspensory ligament to its free extremity, where the glans is still separated from the finger by the lining membrane of the prepuce. Pull the head of the penis up and cut through this cap of mucous membrane in front of the glans, which is palpable with ease through it. The organ is now free with its head covered, as it were, with a night-cap. Slit this up, being careful to hold it away from the wound to avoid douching the old retained *smegma preputii* into the raw surface. Clean well, wrap round with a little gauze and leave for the present. Ordinary care up to now has prevented

any injury to the dorsal vein, and there has not even been a chance of slitting up the penis, as some have done, in the old method of decorticating, on a long handled director, pushed in by the preputial orifice, which, by mistake, has got into the urethra instead of arriving at the *corona glandis*.

Now pull the mass to patient's right (exposing the left side of the neck of the tumor). Cut from above, near external abdominal ring, curving towards the median line in front of the anus. This incision is on the neck of the tumor, at the scrotal angle, and will vary in position, inwards or outwards, according to the state of health of the skin—bearing in mind that this must ever be soft and pliable, that the subcutaneous fat on exposure must have the ordinary healthy yellow appearance—with no tendency to an cedematous or blubbery look. *The trunks of the vessels* will be found running obliquely inwards at the upper angle, transversely inwards at the middle part and will have an antero-posterior direction behind. They can be seized, before section, or after cutting, with pressure forceps. Deepen this incision gradually and work in with finger and scalpel to near the bulb *avoiding any hurt to it*.

Repeat the same procedure on the right side of the neck of the tumor. The two incisions will have met in front of the anus, and all the main vessels will have been seized and divided, and the bulb almost cleared on either side.

The next step is the *enucleation of the testicles*. Unite the base of the median incision with the upper end of the lateral cuts, on either side, seizing the vessels as previously described. From the centre of, say the left of these, over the line of the cord, the knife is freely used—making a vertical wound, through the substance of the growth, which is deepened till the cord be exposed, then the finger, being inserted, is worked around the cord, and moved up and down, enucleating it and the testicle completely, save at the lowermost end of the gland, where is its firmest attachment, which is the remains of the central part of the *gubernaculum testis*. This must be cut away with a blunt-pointed scissors, and every trace of blubbery material should be carefully removed, at the same time, from off the outer surface of the *tunica vaginalis*.

Repeat over the right cord and testicle the process described. The firm testicular attachments are shown in Photo 4, which illustrates the condition of the field of operation at this stage of the procedure, but before final separation of the testicles. Should a hydrocele be present it is removed unopened, it being much easier to dissect out the distended *tunica vaginalis* than after the escape of the fluid. Then open the hydrocele in front (be careful here as the testicle is often distorted and transposed). Cut

away the tunica vaginalis laterally, on either side, to near the mesorchium, being specially on your guard above and behind the *globus major* of the *epididymis*. Wrap the testicles and cords in gauze and place them on the *pubis*.

Torsion-clamp method of blood stasis

Now twist, to say four turns, each vessel held by a pressure forceps, and, before removing it, with a second forceps clamp the twisted artery. The clamp action of the second keeps up the twist and it can be taken off in a few moments. I have absolutely ceased the use of the ligature (save the exceptions noted further on) since taking to this torsion-clamp method. I consider, and experience has proved to me, that, with it, the ligature is unnecessary. In such an operation as this, where as many as 40 vessels at times require attention, if two score pieces of catgut can be done without, the success of the procedure will not be endangered by structures, some of which might subsequently play the parts of "foreign-bodies" in the economy of the healing process. The above method is used then throughout the whole procedure.

The appearance of the field of operation on the complete removal of the tumor is shown in Photo 5. The large extent of the wound is to be noted, in which the decorticated penis is held aloft with a forceps, and the testes hang low, suspended by the lax cords. The wound is dry—there is no weeping, and no sutures have been used. In fact, instead of the worrying ooze, ooze that follows the use of the rubber cord, there is the glaze of the healthy plasma.

THE FLAPS

Now the skin to the right of the wound is to be drawn forwards. Its inner side is lined by the fascia of Colles, and it is the deep surface of this structure that is exposed. Pulling the skin and fascia taut, with a scalpel, make an incision through the latter half an inch long. Put aside the knife, and entering the finger by this window move it up and down and out, freeing the skin from its attachments to the fascia lata over the origins of the *gracilis* and *adductor* muscles.

The vessels will feel as small fibrous cords passing from the deep parts to the overhanging integument like a series of pillars from a floor to a ceiling. They are not broken by the finger, working its dissection through the superficial fascia, although the blood stream in them may be interrupted for a time, by their somewhat rough usage, it must be quickly re-established, as I have not yet met with a single case of gangrene of the flaps.

Practice will determine the amount of covering necessary, but the free margin should come to the median line without tension. Snip with blunt-pointed scissors any portion of Colles' fascia obstructing the sliding in of the flap. Pro-

ceed on patient's left side with the same method.

Having done so take the right testicle. See that there be no oozing from where the tunica vaginalis has been cut away, nor bleeding from any portion of the cord from an injured vein. These are the only parts in the whole operation where a ligature may be found necessary. Place the testicle under the skin flap on the thigh. Repeat the same with the left testicle and draw the flaps to the median line. A few temporary stitches of silk-worm gut keep them in position, whilst a continuous suture run quickly up holds them firmly.

Horse-hair drains

Before the suturing is completed in front and behind, a dressing-forceps is passed in from below and its jaws appear at the base of the penis in front. The ends of two drains being seized they can be drawn down to the lowest extremity of the wound—a little manipulation making their upper ends fall in and lie on either side of the base of the penis under the pubic flaps.

The wound in front of the penis is closed in a similar way to that behind.

During these stages the assistants, holding the thighs, lower them, or approximate them, as required—thus relieving any tension.

There now remains but the very important work of

STITCHING THE FLAPS TO THE BODY OF THE PENIS

Six sutures of horse-hair, with a fine needle, should be introduced at equidistant points through the tunica albuginea and the flaps. It is quite unsatisfactory to merely stitch the skin to such cellular tissue as many remain on the body of the penis. Finally avoid piercing the dorsal vessels and merely take up the tunica and not the erectile structure, and you will introduce no complication into what will give a good result.

The mobility of the skin thus treated is very considerable—so much so, that it is possible, in every case, to bring it over the immense wounds, which at first look so hopeless (see Photos 5 and 6), and provide not only a covering of sound and healthy integument to the perineum, but also to obtain immediate union as well (see Photo 8). Should any small portion of the lining of the prepuce have been left, being healthy, let it be stitched to the tunica albuginea. If there be the least sign of degeneration the whole of it should be pared close to the cervix. It is in the first class of case that great care is to be paid to the application of the penile bandage, which should grasp firmly and evenly the corona and the tissues behind it, slacking off near the pubes. The little flap will then take root and not become oedematous. The only uncovered part remaining will be the circumference of the penis between the basal and cervical flaps (see Photo 6).

This about the fifth or eighth day is grafted by Thiersch's method

The chief points about the flaps are as follows —

1 They are derived from the integument of the upper and inner part of the thighs over the adductor and gracilis muscles

2 The only time the knife is used is when the little window is cut in the fascia of Colles

3 The finger does all the other separation necessary

4 The vessels are not necessarily broken

5 The skin is shifted in by gliding

6 For a good result asepsis is absolutely necessary

The dangers connected with the making of flaps are—

1 Should the wound not remain aseptic the operator has opened up an enormous area of very absorbent tissue

2 If the knife be used too freely the vitality of the integument might be affected, and there would be danger of sloughing

Photo 6 represents the wound, shown in No 5, now closed in the median line—the flaps joining on the pubis, in front of the penis, and falling on its sides, where, being drawn forwards on it, they are sutured firmly to its fibrous envelope, embracing its circumference like a ferule and thus absolutely preventing the possibility of two granulating surfaces—common in the old operations—uniting and binding it by cicatricial tissue to the perineum, rendering it useless as to intermittent powers, and, when used as a micturating organ, strongly reminding one of the function as performed in the *camelidae*. Photo 12 shows this. It is from an old case of recurrence. The patient urinated backwards—certainly was I think a gymnastic feat. In Photo 13 the organ is situated in the midst of firm cicatricial tissue. To both of these individuals the natural urinary and genital functions were restored by me.

Behind the penis (Photo 6), in the mid line, there are seen the sutures ending posteriorly at the gap left for the extremities of the two horse-hair drains. On either side of the line the bulgings corresponding to the testicle are manifest

CONDITION OF TESTIS

I know of no better opportunity for studying the external anatomy of the testicle than that afforded in the operation for elephantiasis scroti. One cannot imagine beforehand the marvellous changes in shape that the pressure of this disease causes.

If the testicle be quite flattened out, represented merely by a mass of fibrous tissue containing a little gland material, supported by a lengthy flabby cord, the circulation in which is dull, I think the best practice is to remove it—more especially if masses of leathery tunica have had previously to be cut away. Should an

abscess have been present in the tunica, or testicle, certainly castrate

I have noted in all cases of hydrocele either congestion of the head of the epididymis, where the tunica is reflected from it backwards to the mesorchium, or fibrous induration of the same parts. It is possible that disease in the veins, or lymphatics, at this situation—"filtration-angle" as it were—may have to do with predisposing to hydrocele.

THE SOURCES OF HAEMORRHAGE DURING THE OPERATION

The vessels of macroscopic anatomy are greatly enlarged, and their branches increased in number and in calibre—

1 At the root of the penis, and over the cord, at the superior and external angle—superior external pudic Vs

2 At the outer side of the cord—inferior external pudic Vs

3 Passing into the side of the perineum—muscular branches of the sciatic

4 Running from behind forwards to the back of the tumor—superficial perineal Vs (Always the largest)

5 When lifting out the cord and reflecting its coverings if diseased—cremasteric Vs

6 The dorsal vein of the penis—should never be injured. At times it is very large, but it is not necessary to interfere with it

7 The frænum—its artery. The most troublesome vessel in this region! Frequently it will not be denied a ligature!

The foregoing are the trunks that furnish blood to the tumor superficially, and if the incisions be planned, as I have directed, the supply is stopped off at once, whereas, if the testicles be enucleated first an extra quantity of blood will be lost—as the vessels, now cut at their distribution, have again to be divided at the neck of the tumor!

Therefore in operating without the cord

1 Note first the lines of approach of the vessels

2 Make the incisions in the order stated—seizing the arteries as soon as divided, or on exposure

3 Employ no ligatures—use the torsion-clamp method

The Sutures

Silk worm gut for main supporting stitches on the pubis and in the perineum, and strong horse-hair as a continuous suture, or not, as may be desirable. Fine needles and fine horse-hair are requisite for stitching the flaps to the tunica albuginea of the penis

Drainage—

I employ two horse-hair drains placed as noted above. Rubber tubing is not necessary

The Dressings

A strip of sterilised oiled silk may be placed over the line of the wound and another around

the denuded penis. The former is not required and may be dispensed with as there is no granulating surface where it is applied—the union being by *first intention*. The penis, on the contrary, is decorticated and the silk will facilitate the subsequent removal of the dressings.

Strips of sterilised bovic lint wrung out of 1–20 carbolic lotion are then applied over the perineum and around the root of the penis.

Penis dressing

The penis being grasped by the finger tips of the *arde*, applied to the glans, is well drawn out, and a bandage of gauze (Perchloride or Iodoform) one inch wide, is wound carefully around, fairly firmly near the cervix, less so towards the root. If this be not attended to the end of the penis will swell and should any healthy mucous membrane have been left from the interior of the prepuce, as a flap, it will become oedematous. Again, if loosely applied, it will gape and the wound on the penis will become septic.

Perineal and Pubic dressings

The gauze (Perchloride or Iodoform) in proper lengths of single filmy thickness is applied by allowing it to fall and arrange itself in folds from above down. The inner parts cling along side of the penis, enveloping its base laterally, and also its dorsum and venter to its middle. The gauze, falling thus, adapts itself well, and should form an even pad, extending back to the anus, and forwards above the pubes to near the umbilicus, and well out beyond the pubic arch on to the thighs.

When so used it gives a resilient dressing and forms a sort of valve around the base of the penis—to the bandage on which it must be evenly and firmly stitched.

The old fashioned way of taking many folds of dressing and cutting a hole in the centre, and then bringing the penis through the opening, is wrong, as by it, one will find it practically impossible to maintain the wound sweet. The portion of the wound most likely to get septic is that at the base of the penis—first, because it never gets rest owing to changes in the size of the penis, and second, if the dressings be not brought up and stitched to the sides of the penis bandage, there will be an open space on loosening of the dressings in a few hours as the patient shifts about in bed. The method recommended gives an elastic pressure with perfect and even closure of the field of operation in this dangerous region, and, since using it first, continued experience has further impressed upon me its importance and the futility of the old way.

Dr. Manson says (*Tropical Diseases*, 1900) "the dressing should be massive, well padded, and kept in place by an eight-tailed bandage secured in front and behind to a strap round the waist, a hole being cut in front for the penis to emerge. The large wound generally does well."

However applicable this may be for the operation recommended by Dr. Manson it is quite unsuitable for my method. The dressing must be well and equally applied, as described, and kept firmly in contact by a roller affording even pressure as shown in Photo 7.

The manner in which this is done is of importance. Should the application of the bandage be slovenly, or careless, the dressings shift, the margins gape, the flaps are not maintained by an uniform pressure and sepsis is the result! If my method be pursued, other things being equal, the large wound (covered in now) will not *generally* but *always* do well!

THE BANDAGE

Very important indeed is the correct binding of the bandage and it well merits its personal application by the surgeon. The material is what is known in the bazaars here as "bandage-cloth." It is manufactured in the villages and costs there about four annas a *thun*, and seven annas in Calcutta. English bandages of calico are quite unsuitable. Photo 7 represents the patient resting on the bandaging-block that I use, and it will be found a most convenient one for the purpose.

It also shows how the roller grasps firmly the pelvis and compresses the dressings on the pubes, and, in the manner of a double spica, holds firmly the tissues at the upper and inner parts of the thigh—disturbed by the shifting in of the skin for the flaps, and how it crosses and re-crosses the perineum, from before backwards and from behind forwards, supporting evenly and well the flaps covering the testes and root of penis. Its continuity with the penis bandage is also manifest. In fact the pelvis and pubis, the groins, perineum, and inner parts of the buttocks, are so bound that the gauze is thoroughly kept in position, and yet the anus is uncovered and no obstruction is there to the passage of a soft catheter if required. Safety pins and a needle and thread judiciously used, especially in the dangerous area, make everything absolutely firm, and prevent exudation and give that rest so essential for the quick healing of such an immense wound.

The bandaging having been completed and the patient placed in a warm bed, a half hoop of bamboo supports the weight of the blankets, etc., from off the middle of the body. (In private cases I prefer the sheets of the bed to have been dried after soaking in bovic lotion.) The knees being tied together, the patient may flex the hips or not as he wishes, and he may be subsequently turned on either side should he so desire. This facilitates the escape of flatus, and relieves him from feelings of sickness.

SYMPTOMS OF SHOCK.

Should these supervene then ether and strychnia hypodermically, and if required sub-

cutaneous transfusion of saline fluid I would caution the operator to be specially on his guard in cases where there is also elephantiasis of the legs or the arms, also the chloroformist should bear this same caution in mind. Bandaging the extremities, and their elevation, together with the application of the faradic current, superadded to the foregoing measures, will rescue what otherwise might prove a hopeless case.

SUBSEQUENT TREATMENT

The bladder may require to be relieved, and for this, the instrument of choice is a good No 8 Jacques' red catheter.

On the fifth day the bowels are moved by a laxative, or enema, or both, and then

THE FIRST DRESSING

is carried out. The position most convenient for this is that shown in Photo 8 where the patient is supported comfortably on a dressing-block which is a padded oblong piece of wood 5" square on section. (The bandaging-block previously spoken of is not suitable.) Over it falls a waterproof sheet, which covers the bed, and, on this, underneath the pelvis is a basin which receives the douching lotion. When the bandages are cut, the dressings easily come off as far as the boric lint, it also, on softening with lotion, gives no trouble. Thorough moistening of the penis bandage allows of its removal. The appearance presented is that of an aseptic united wound such as is shown in Photo No 8. The whole field of the operation is then carefully washed and cleaned around. This is grateful to the patient. The gentle rubbing has also a healthy action on the circulation of the parts. The drains should have been removed early and found quite sweet.

If there be any irritation of the tissues from the antiseptics, I use sterilised boric gauze next the skin and apply it dry.

The re-dressing is carried out as at the operation and the same care is taken in the application of the roller (the bandaging-block is now substituted for the dressing-block).

The bowels move daily, and the progress is generally uneventful till the

SECOND DRESSING

which takes place on the 10th day and is carried out in a similar method to that just described. Now the stitches may in part be removed, and the deoiled penis grafted after the method of Thiersch if this was not done at the time of the first dressing. The grafts are taken from the thigh or arms.

About the 15th day the patient walks about, but I do not allow him to sit. By the 21st day he can do as he wishes and is ready for discharge.

THE CONDITIONS COMPLICATING THE OPERATION are various—

Those mentioned are such as I have met with
(a) *Hernia*—Enterocoele—Epiplocele, Entero-Epiplocele. The radical cure can be performed at time of removal of tumour.

(b) *Hydrocele*—Of the funicular, virile and testicular varieties. Excellent opportunities for the study of the formation of these in all stages are afforded. The tunica vaginalis will be found in all states, from the thin, almost normal, membrane, to a structure $\frac{1}{2}$ " thick, studded with fibrous plates, which have the macroscopic characters of cartilage. This tunica is at times very voluminous, when great care must be taken in dissecting the upper portion from the structures of the cord lest injury be done to the circulation of the testes.

(c) *Varicocele*—This is not so common as one would expect, though I have removed very large examples of it.

(d) *Great length of the Spermatic Cord*—In such a case as is shown in Photo 10 this may be expected. Then the cord should be packed in half folds and these stitched to each other and to the deep tissues above and below.

e *Blubbery infiltration*—Occasionally I have met with this surrounding the testicles and extending up the cords to the abdominal rings. As it is in the deep tissues, it is of course quite distinct from that met with in the usual site of the superficial fascia. Every trace of it should be cleared away.

COMPLICATIONS MET WITH IN THE AFTER-TREATMENT

The commonest is an attack of *fever, of a malarial character*, with a temperature running possibly to 104°. This is speedily got in check by the use of ordinary diaphoretics, followed by quinine.

A condition causing more anxiety is where the patient gets *fever, of a continued type*, with daily exacerbations. The diagnosis here must be made as to whether the cause is septic poisoning, or is a fever with a malarial basis. If of the latter character the wound will be aseptic and uninfamed, no puffiness or pain will be present in the perineum, or in the pubic region. The countenance of the patient will not be anxious, his eyes will be clear and his tongue clean, and when the fever is low, he will have a sense of wellness and express himself as being fairly comfortable. Whereas, if sepsis be the cause, the condition will be very different, and suppuration will be found in the wound, or its neighbourhood. I treat this ordinary continued type of fever by giving freely tincture and decoction of bark with sweet spirits of nitre and acetate of ammonia. This mixture agrees much better than quinine, and seems to me much more efficacious.

If *irritation of the skin of the pubis, buttock or flaps in the perineum* of an eczematous nature occurs, due to the antiseptics, I recom-

ment that dry boric gauze be used. The injudicious application of strong carbolic and perchloride lotions is to be deprecated. I have seen maceration of the cuticle due to the abuse of these good agents. Iodoform drenched over the parts under the dressings facilitates the undesirable state of affairs. Given a clean wound, brought together without tension, cover it with sterile boric lint, and, *outside* it, apply the gauze charged with carbolic acid, Perchloride of mercury or iodoform. The result will be as you desire.

Retention of urine is very common, and it is not to be wondered at. I can only say do *not* use either a silver instrument or a gum-elastic catheter, but take a sterile Jacques' red rubber No 9, and you will have no trouble, and the patient no pain and a possible urethritis will have been prevented.

Troublesome Erections occur at times. An ice bag to the perineum (oiled silk intervening between it and the dressings) is the most efficacious remedy. Of the virtues of Camphor and potass bromide, I am sceptical. They may be tried.

ELEPHANTIASIS IN THE FEMALE

Thorough attention must here be paid to the cleanliness of the vulva and vagina. The same routine as in the male, making allowance for the sex, is pursued, and the patient is prepared in a like manner. As Photos 14, 15, 16, and 17 show, the disease may attack one of the labia majora, one of the labia minora, the prepuce clitoridis, this same structure as well as one of the nymphæ. In addition the whole external genitals may be attacked. In the cases photographed the disease was limited as stated.

THE OPERATION

is very simple. An external incision is made through the healthy skin, and, inside the growth, a second one through the healthy mucous membrane. These cuts are deepened and prolonged forwards and backwards till they meet. The vessels are seized and the tumour removed. I advise that a Jacques' Catheter (No 10) be introduced into the bladder, before the incisions be begun, and be retained there. If this be not done then the wound may be douched with urine at an inopportune moment. It is also much easier to introduce the instrument before cutting the parts as the subsequent retraction alters considerably the normal relations, which had already been rendered quite sufficiently bewildering by the nodular masses of the growth.

Blood stasis being perfect the skin can be shifted in and united to the line of section of the mucous membrane of the vagina, which also is itself loosened and drawn down. No drain is required. Dry dressings are used and the vagina lightly packed with gauze.

The bandage firmly fixes the dressings in the manner described before and the catheter has a stitch in it, fixing it to the roller, as it passes through.

In five days change the dressings and you will find the parts united, save superficially here and there. Simple applications and ordinary cleanliness now suffice.

CONCLUSION

Finally, as to this operation, I may repeat now, with greater emphasis, what I said in 1897, and ask that my procedure be judged in the usual manner—

1st—As to the mortality attending it

2nd—As to the

(a) immediate and

(b) remote results to the patient

3rd—As to the advantages it presents to the surgeon and the hospital

1st—Dr Hina Lal Basu, one of my assistants, has collected the statistics of the cases treated in the Civil Hospitals in Bengal Proper from 1882 to 1899. I give it below—as well as one showing the cases treated in the Medical Institutions in Calcutta from 1888 to 1899.

Statement showing the number of cases treated in the Civil Hospitals in Bengal Proper between 1882 to 1899

Total treated	Cured	Died	Rate per cent of death
910	839	71	7.802

Statement showing the number of cases treated in the Medical Institutions in Calcutta between 1888 and 1899

Total treated	Cured	Died	Rate per cent of death
946	880	66	6.976

In the mofussil the mortality from the operation is, according to this statement, 7.802 per cent. In Calcutta it is 6.976 per cent. This is a great improvement on the old days when the mortality was 18.2 per cent.

The tables drawn up by my House Surgeon Dr Debendro Nath Hazra assisted by Medical Student Sudhakar Mukher, and examined for me by Dr Satya Saran Chakravarti, the Registrar of the Medical College Hospital, show 140 cases of this operation successfully done by me. These cases are consecutive operations, and not selected, and a perusal of the matter under the heading

CHARACTER AND CONDITION OF THE PATIENTS will show that the patients were not all favourable cases for a surgical procedure of magnitude.

2nd—(a) The patient has a wound covered with skin and is therefore less liable to septic

absorption and its concomitant evils. The perineum is closed and healed up in eight days. The flaps are continuous on and around the base of the penis. Hence there is no necessity for clearing the penis from off underlying granulations, since none exist. The organ is quite free. Compare this with the result from the old operation. In Photos 12 and 13 I am enabled to show the condition that usually followed that procedure—as far as binding down of the penis to the granulating surface that surrounded its base. The cicatricial bands are well shown. It can be imagined that copulation was impossible, and in No. 12 miction was *à posteriori*. I successfully operated on, both these cases and

restored the function of the organs with the removal of the growths. The flap method then precludes such untowards results.

(b) The remote effects are very favourable—being a pliant and soft perineum, and a penis, covered with skin instead of cicatricial tissue, thus giving an organ in every way fit for its duties. I have seen many of my old cases and found everything very satisfactory as to these points.

3rd.—The surgeon has several advantages—(a) he cures his patient quickly—average under 30 days (McLeod's published cases, operated on by his method, give an average of 70 days in hospital. This advantage leads to less crowding and more beds.

No.	NAME, AGE, CASTE, OCCUPATION	Same disease in Family	Other cases in his Village	PREVIOUS HISTORY			
				Hydrocele	Syphilis	Fever and Inflammation	Skin disease
58	Beharylall, Hindu, Rent Collector, age 40	None	Rare	None	None	Periodical fever with inflammation of inguinal glands at intervals of 25 to 30 days	Eczema
59	Dhani, Hindu, Cultivator, age 30	None	Rare in his village, but common in Mura-hid-a-bad, where he used to reside for last several years	Yes	None	Periodical fever at full and new moon with swelling of inguinal glands and scrotum afterwards	Ringworm of long ago when a boy
60	Shoik Badal, Mahomedan, Farmer in a Jute Mill, age 30	None	Rare in his village	Yes	Yes. He had it about four years ago	Periodical fever at new and full moon with swelling of inguinal glands and red pimples used to appear on the scrotum	Ringworm
61	Sukhad, Ram, Hindu, Daftry, age 24	None	None	Yes	Yes	Periodical fever at full and new moon with slight inflammatory condition of the spermatic cord	None
62	Kandarpa, Hindu, male, Farmer, age 60	None	Frequently met with in the locality	Yes	Yes	Periodical fever every 15 days lasting for a day or two, with orchitis of the left chord	Eczema
63	S. C. Bonard, E. I., male, Com pounder, age 30	None	Rare in his village	Yes	Yes	Gets malarial but not inflammatory, fever	Had eruption of S. S., but no other skin disease.
64	Benodo, Hindu, male, Shop keeper, age 40	None.	Rare in his village	Yes	None	Periodical fever at full and new moon with swelling of the scrotum and testes.	None
65	Luchman, Hindu, male, Coolie, age 40	None	Rare in his village	Yes	Yes	Periodical fever at intervals of four or five months with swelling of scrotum	Ringworm
66	Parbati, Hindu, male, Cultivator, age 35	None	Saw two cases in his village	None	Yes. Chancro	Periodical fever at intervals of a month, and sometimes at intervals of week with swelling of the scrotum	Ringworm.
67	Ramsatya Gornit, Hindu, Farmer, age 35	None	None	Yes	None	Had twice fever with inflammation of inguinal glands.	Ringworm.
68	Amulyannath Chatterjee, Hindu, male, Brahmin Priest, age 23	His father had Hydrocele	Frequent.	Yes	No.	Gotting intermittent attack of fever for the last three months, with pain in the joints.	Eczema.

(b) There is no fouling of the air of hospital wards, by having numbers of cases with pus forming sores occupying them

(c) The wounds being closed and healed in eight days, the responsibility for the case is less, as any possible negligence of a dresser could then inflict practically no damage after that period

McLeod (*Heath's System of Surgery*, Vol II, page 399) propounds two questions demanding consideration in elephantiasis scroti —

(1) "In what circumstances is 'recourse to operation justifiable or desirable'?" and (2) what is the most approved and successful method of operating?"

With reference to the first proposition, I may state that in this series of 140 consecutive cases, I have operated on every patient that presented, preparing each however for the operation according to the recognised cardinal rules of surgery. As I have before stated, the series embraces examples of all the ordinary complications usually found, and the exception was to have a wholly uncomplicated case

Regarding proposition 2, I can at least claim that the method brought forward can be done well and with simplicity, and that the immediate and remote results are more favourable than in any other way of operating in elephantiasis of the genitals

Duration	Where begun.	Condition of Inguinal Glands.	Character of Tumour	Date of Operation	Date of Discharge	Days in Hospital after Operation	Weight of Tumour	Microscopic Examination of Blood	REMARK
4 years.	On Scrotum	Slightly enlarged	Elephantoid	16-4 98	2-6 98	1 month and 17 days	1½ lb	Not examined	Suffered from malarial fever after operation
10 years	On Scrotum	Slightly enlarged and indurated especially obliquely set.	Elephantoid with Hydrocele complicated with Urinary Fistula.	14 5 98	24 6-98	1 month and 10 days	7 lbs besides hydrocele fluid 24oz. from both sides	Not examined	Practically healed up in 15 days Subsequent Skin grafting
More than a year	On Scrotum	Not enlarged	Elephantoid	30 7 98	21 8 98	22 days	2 lbs.	Not examined	Uninterrupted recovery
4 years	On Scrotum	Not enlarged	Sarcocele double	4 8 98	22-8 98	18 days	1 lb	Not examined.	Uninterrupted recovery
8 years	On Scrotum	Slightly enlarged and indurated left side	Elephantoid with Hydrocele and Hernia.	10 9 98	17 10 98	1 month and 5 days	6 lbs	Not examined	Suffered from malaria fever
Nearly 6 months.	In Prepuce	Not enlarged	Elephantoid with Hydrocele	21 9 98	5 11-98	1 month and 14 days	1 lb	Filariae present	Suffered from malarial fever
6 years	On Scrotum	Not enlarged	Elephantoid with Hydrocele	28 9 98	25 10 98	27 days.	2 lbs	Not examined	Nothing important. Skin grafting
7 years	Scrotum	Enlarged	Elephantoid with Hydrocele	10 10 98	22 12 98	2 months and 13 days	11 lbs.	Not examined	Nothing important Skin grafting
3 or 4 years	Scrotum	Slightly enlarged	Elephantoid	5 11 98	9 12-98	1 month and 4 days	8 lbs	Not examined	Nothing important. Skin grafting.
3 years	Scrotum	Slightly enlarged, but moveable and distinct.	Elephantoid with Hydrocele	13 2-99	23 3 99	38 days	6 lbs 8 oz besides fluid 3 oz	Not examined	Nothing important Skin grafting
5 years	Scrotum	Indurated on both sides.	Elephantoid	29 10 98	2 12 98	1 month and 13 days	3 lbs.	Not examined	Nothing important. Skin grafting

No	NAME, AGE, CASTE, OCCUPATION	Same disease	Other cases	PREVIOUS HISTORY			
		in Family	in his Village	Hydrocele	Syphilis	Fever and Inflammation.	Skin disease
69	Beharilall, Hindu, male, Grocer, ago 46.	His father had big Scrotal Tumour of similar size.	Some other cases present in his neighbourhood	Yes	Yes. Soft sore	Getting fever for the last six months.	Ringworm
70	Saroda Prasad, Hindu, male, Cultivator, ago 40	Nil	Frequent	Yes.	No	Fever during new and full moon	Scabies all over the body
71	Kunjabehary Chuckerborty, Hindu Brahmin, Priest, Inhabitant of Bankura, ago 52.	His father had Hydrocele	Frequent.	Had Hydrocele	Yes	No fever, had two abscesses in the scrotum	No
72	Saratbandra Chatterjee, Brahmin, a Gomasta, ago 40	His grand father had Hydrocele	Frequent.	Yes	Yes	Getting intermittent attack of fever for the last three years. Had two abscesses in the scrotum and one in the penis.	Eczema and scabies
73	Jogneswar, Hindu, male, Weaver, ago 33	Nil	Frequent		No	No fever. Very seldom used to get fever, especially after long walking	Nil
74	Dharendra, Hindu, male, Clerk, ago 22	Nil	Frequent	Yes and also Haemorrhoids	No	No fever for a long time. Enjoyed a very good health	Yes. Ringworm in the groin.
75	Jogendra, Hindu, male, Medical practitioner, ago 40	Nil	Frequent	Yes	No	Gets intermittent attack of fever with concomitant inflammation of scrotum	No
76	Saroda, Hindu, male, Kavay, ago 42	None	Frequent.	None	None	No fever	No
77	Bholanath Madak, Hindu, Confectioner, ago 51	None	A few cases present.	Yes	Yes	Getting occasional attack of fever. Had inflammation of left leg a year and a half ago.	None
78	Jnanprasanna Chowdhury, Hindu, Brahmin, ago 34	Yes	Two cases present	No	No	Used to get occasional attacks of fever	None
79	Munshi Elahi Bux, Mahammadan, Contractor, ago 46	None	A few cases present.	No	Yes	Accompanied with periodical swelling, pain and fever	None
80	Jibanchandra Ghosh, Hindu, Cultivator, ago 33	None	A few cases present	No.	No	Used to get occasional attacks of fever and inflammation of the inguinal glands and of scrotum	None
81	Adhar Chandra Mukerji, Hindu, Accountant, ago 41	None	None	No	No	Accompanied with fever and inflammation of the right testis	Yes.
82	Nirad Chandra Mukerji, Hindu, Student, ago 23	None	None	Yes	No	No fever. Had periodic enlargement of the scrotum	No
83	Jogendranath, Hindu, male, Cook, ago 30	None	None	Yes	No	Accompanied with fever and enlargement of inguinal glands	No
84	Bansanidhi, Hindu, Uria Cook of Poor, ago 30	None	None known	Yes	Nil	One year ago had fever, used to come twice a month, during which the scrotum used to be tender, but now there is none.	Nil
85	Ramtarak Das, Kayastha, Carpenter of Sibpur, ago 30	None	Can't say	Yes	Yes	Present	Nil
86	Hiralal, Kayastha, Medical Practitioner of Calcutta, ago 26	None	None	Yes	No	Nil	Nil
87	Upendra, Brahmin, Medical Practitioner of Calcutta, ago 24	None	None	Yes	No	Nil	None
88	Akshoykumar Banerji, Brahmin, Priest of Mahara, Dt Burdwan, ago 50	His father had it.	Yes	Yes.	No.	Since August last he has been getting fever off and on, which was accompanied by pain and inflammation	None
89	Aniuddi, Native male, Coolie of Budge Budge, ago 47	His oldest brother alone had it.	None noticed by him	Yes	Nil	Suffered malarial fever these 12 years off and on	None

Duration	Where begun	Condition of Inguinal Glands.	Character of Tumour	Date of Operation	Date of Discharge	Days in Hospital after Operation.	Weight of Tumour	Microscopic Examination of Blood	REMARK.
4 years.	Scrotum.	Not indurated.	Elephantoid.	3 12-98	25 1-99	1 month and 22 days.	Solid portion 37 lbs Liquid 13 lbs aspiration.	Filariae present.	Nothing important. Skin grafting
5 years.	Scrotum.	A little indurated on both sides.	Elephantoid	26 11 98	1-1 99	1 month and 22 days	2 lbs	Not examined	Nothing important. Skin-grafting
2 years.	Scrotum	Shotty and indurated.	Elephantoid.	10 12 98	22 1 99	1 month and 12 days	15 lbs.	Filariae not found.	Nothing important. Skin grafting.
8 years	Scrotum	Indurated on both sides	Elephantoid	26 12-98	12 2 99	1 month and 24 days	11 lbs	Not examined.	Nothing important. Skin grafting.
6 years	Scrotum.	Not indurated.	Elephantoid.	28 12 98	5 2 99	1 month and 8 days.	7 lbs.	Filariae found	Nothing important. Skin grafting
4 years.	Scrotum	Not indurated, enlarged	Elephantoid	30 12 98	9 1 99	11 days	2 lbs	Not examined.	Uninterrupted recovery
A case of recurrence 1st operation performed by Dr. McLeod, 11 yrs ago, recurred 3 years after 1 year	Scrotum	Enlarged.	Elephantoid	11-1-99	17 2 99	1 month and 6 days	38 lbs 4 oz.	Filariae found.	Uninterrupted recovery
	Penis.	Not enlarged	Elephantoid.	16 12 98	1-1 99	16 days.	1½ lbs.	Filariae found.	Nothing important.
About 20 years. A case of recurrence, once operated when 19 years old.	Penis.	Not indurated	Elephantoid	24 2 99	24-3-99	30 days.	14 lbs. 8 oz.	Ditto.	Ditto.
About 12 years	Scrotum	Not indurated	Elephantoid	5-3-99	30-3-99	25 days	4 lbs. 8 oz.	Not found.	Ditto.
About 20 years	Scrotum	Not indurated	Elephantoid	6-3 99	6-4-99	1 month and 2 days.	3 lbs. 9 oz.	Not examined.	Ditto.
About 5 years	Scrotum.	Enlarged but not tender	Elephantoid	7-3 99	1 4 99	24 days	19 lbs. 10 oz.	Ditto	Ditto
About 3 years.	Scrotum	Not indurated.	Elephantoid	8-3-99	5 4-99	25 days.	1 lb 8 oz.	Ditto.	Ditto.
4 years	Scrotum	Normal.	Elephantoid	11-4 99	6-5-99	20 days.	1 lb	Ditto.	Ditto
8 years	Scrotum	Enlargement.	Elephantoid	24-5-99	15 6 99	22 days	4 lbs.	Ditto	Ditto
6 years.	Scrotum	Slightly enlarged.	Elephantoid.	30 7 99	10 9 99	1 month and 10 days.	3 lbs.	Ditto	Ditto.
8 years	Scrotum	Normal.	Elephantoid	1-8-99	10 9 99	1 month and 9 days	1 lb 8 oz.	Ditto	Ditto
8 months	Scrotum.	Normal	Elephantoid	11-8-99	26 8-99	15 days	8 oz.	Ditto	Uninterrupted recovery.
2 months	Scrotum	Normal	Elephantoid	11-8-99	26-8-99	15 days	3½ oz.	Filariae present in the hydrocele fluid	Ditto
8 or 9 years	Scrotum	Normal	Elephantoid	28-8-99	10-9 99	14 days.	10 lbs. 6 oz	Not examined	Ditto
10 years.	Scrotum	Slightly enlarged	Elephantoid	31-8 99	4 10-99	34 days	10 lbs. 2 oz.	Ditto.	Ditto.

No	NAME, AGE, CASTE, OCCUPATION	Same disease in Family	Other cases in his Village	PREVIOUS HISTORY			
				Hydrocele	Syphilis	Fever and Inflammation	Skin disease
90	Beharilal Kola, Hindu, male, Shopkeeper, age 35	None	One case present.	Yes	Yes	<i>Nil</i>	None
91	Tincowry, Hindu, male, Grocer, age 40	None	None noticed by him	Yes	Yes.	Had fever only ten days before admission	None
92	Gopi, Hindu, male, Farmer, age 40	None	None noticed by him	No	<i>Nil</i>	Since 12 years he had occasional attacks of fever, attended with inflammation and periodical discharge	None
93	Sudarsan Bannerji, Hindu, male, age 38	None	Yes	Yes	<i>Nil</i>	Fever and inflammation occasional	None
94	Kedar Botu, Hindu, male, age 40	None	Yes	Yes	No	No	Yes
95	Gadadhar Saha, Hindu, male, age 31	None	One case present.		Yes	Used to get fever off and on before	None
96	Krishnalal Roy, Hindu, Cultivator, age 36	None	Many cases present	None	Yes.	Used to get occasional attacks of fever and inflammation of both the inguinal glands	None
97	Nabin Chandra Mandal, Hindu, Servant, age 60	None	Some cases present	Present.	None	Used to get periodical attacks of fever and inflammation of scrotum	None
98	Kailash Chandra Maji, Hindu, Labourer, age 25	None	2 cases present	Yes	No	Used to get occasional attacks of fever Has got inflammation of right leg	None
99	Jogesh Chandra Karmakar, Hindu, Goldsmith, age 29	None	None	Yes	Yes	Used to get occasional attacks of fever	Yes.
100	Manick Chandra Rana, Hindu, Confectioner, age 26	None	5 cases present	Yes	Yes	Used to get fever now and then with inflammation of the testis.	Yes
101	Sonatan Saha, Hindu, Coolie, age 34	None	2 cases present.	No	No	Used to get occasional attacks of fever	Yes
102	Damo, Hindu, age 40	None	5 or 6 cases, many of legs	No	No	No	Yes
103	Durgapada Chatterji, Hindu, Clerk, age 25	None	Few cases known	No	Yes, 6 years ago	Occasional attacks	Eczema.
104	Banwari, Hindu, Servant, age 30	None	Several cases of elephantiasis of scrotum One case of elephantiasis of penis	No	No	Used to get occasional attacks of inflammatory fever	Yes
105	Vishonji Irjee, Hindu, Merchant, P. C., age 25	None	None	Yes	No	Occasional attacks with exudation of lymph	Ringworm
106	Durga Das, Hindu, Zamindar, P. C., age 25	None	Some	Yes	No	Occasional attacks with exudation of lymph	Ringworm
107	Haridhan, Hindu, age 35	None	None	No	No	No fever Inflammation increased with full moon	No
108	Devendra, Hindu, age 30	None	None	No	No	Occasional attacks	Yes
109	Janakinath, Hindu, age 35	His father suffered from scrotal tumour	None	Yes	No	Occasional fever increased with full moon	Yes
110	Easaw, Mahammadan, age 40	No	None	No	Yes	No fever Inflammation increased with full moon	Yes.
111	Chandra, Hindu, age 30	No	No	Yes	No	Increased with full moon	No
112	Rampada, Hindu, age 35	No	Many	Yes	No	Fever off and on.	No

Duration	Where begun	Condition of Inguinal Glands	Character of Tumour	Date of Operation	Date of Discharge	Days in Hospital after Operation	Weight of Tumour	Microscopic Examination of Blood	REMARK
8 years	Scrotum	Not enlarged	Elephantoid	27 9 99	28 10 99	1 month	8 lbs. 6 oz.	Not examined	Uninterrupted recovery
2 years.	Scrotum	Indurated.	Elephantoid	20 9 99	11 10 99	20 days	10 lbs	Ditto	Ditto
About 12 years	Scrotum	Not enlarged	Elephantoid	29 9 99	1 11 99	31 days	1 lb	Ditto	Ditto
8 years	Scrotum	Not enlarged	Elephantoid	1 10 99	8 11 99	1 month 8 days	4 lbs	Filariae not found	Ditto
12 years	Scrotum	Enlarged	Elephantoid	4 11 99	20 12 99	1 month and 16 days	15 lbs	Ditto	Ditto
6 years	Scrotum	Enlarged	Elephantoid	17 11 99	26 12 99	1 month and 8 days	27 lbs	Ditto	Ditto
About 6 years	Scrotum	Enlarged	Elephantoid	22-11 99	15-12 99	23 days	4 lbs	Ditto	Ditto
About 20 years	Scrotum	Not enlarged	Elephantoid	7 12-99	3 1-00	27 days	8 lbs 4 oz. 16 oz. of hydrocele fluid	Filariae present	Ditto
About 4 years	Scrotum	Indurated	Elephantoid	4 12-99	26-12 99	23 days	4 lbs besides hydrocele fluid 18 oz.	Filariae not found	Ditto
About 2 years	Scrotum	Not indurated	Elephantoid	12-12 99	23-1-00	41 days	2 lbs 6 oz. besides hydrocele fluid 10 oz.	Filaria not found	Malarial Fever
About 8 years	Scrotum.	Indurated	Elephantoid	5 12 99	27-12 99	23 days	9 lbs 2 oz. besides hydrocele fluid 7 oz.	Filaria not found	Uninterrupted recovery
About 4 years	Scrotum	Indurated	Elephantoid	30 11 99	5 1 00	1 month 5 days	7 lbs 8 oz.	Filaria not found	Malarial Fever for 7 days
2 years	Scrotum	Not enlarged	Elephantoid	9 1 00	9 2-00	1 month	5 lbs	Filaria not found	Uninterrupted recovery
1½ year	Scrotum	Indurated	Elephantoid	17 1 00	5 2 00	19 days	6 lbs	Filariae not found	Uninterrupted recovery
4 years	Scrotum.	Enlarged and indurated.	Elephantoid scrotum and penis	13 2-00	10 3 00	25 days	4 lbs 2 oz	Filariae not found	Uninterrupted recovery
4 years	Scrotum	Not indurated.	Elephantoid	4-12-99			10 lbs.	Filariae not found	Uninterrupted recovery (Healed up in 12 days and skin grafting)
4 years	Scrotum and Penis	Not indurated	Elephantoid	6-1-00			18 lbs	Filariae not found	Uninterrupted recovery (Healed up in 21 days and skin grafting)
About 2 years	Scrotum.	Not enlarged	Elephantoid	7 5-00	2-6-00	26 days	2 lbs	Filaria detected	Uninterrupted recovery
About 4 years.	Scrotum	Indurated	Elephantoid	21 5-00	20 6 00	30 days.	6 lbs	Filaria present	Uninterrupted recovery Skin grafting
6 years	Scrotum and Penis	Indurated.	Elephantoid	4 6-00	2 7 00	28 days.	8 lbs.	Filaria present.	Uninterrupted recovery Skin grafting
3 years.	Scrotum	Not indurated	Lymph scrotum	2-8 00	1 9-00	80 days	6 lbs.	Filaria present.	
4 years	Scrotum.	Not enlarged	Lymph scrotum	1-8 00	8 9-00	33 days.	6 lbs	Filaria present.	
10 years.	Scrotum	Normal	Elephantoid	31-8 00	7 10 00	37 days	4 lbs.	Filariae present.	

No	NAME, AGE, CASTE, OCCUPATION	Same disease in Family	Other cases in his Village	Hydrocele.	Syphilis	PREVIOUS HISTORY	
						Fever and Inflammation	Skin disease
113	Bojoy Krishna Das, Hindu, age 21	No	No	No	Yes	Fever off and on	No
114	Tajuddin, Mahammadan, age 42.	No	Many	Yes	No	Fever every month	No
115	Ishan Shaha, Hindu, age 32	No	Many	Yes	Yes.	Fever off and on	Ringworm
116	Sarada, Hindu, age 36.	His brother had the disease	Many	Yes	Yes	Fever off and on	No
117	Bipin Pal, Hindu, age 30	No	Many	No	No	No fever	No
118	Rakhal, Hindu, age 25	No	Many	No.	No	No fever	No
119	Harpada, Hindu, age 30	His father had the disease	Many	Yes	Yes	Fever off and on	No
120	Laloo, Hindu, age 25	No	Many	No	No	No fever	No
121	Harpada, Hindu, age 35	No	Many	Yes	No.	Fever off and on.	No
122	C Davis, age 38.	No	Many cases in the part where he lived	No	No	Fever off and on	No
123	Ramanand, Hindu, age 40	No	Many	Yes	No	Fever off and on	No.
124	Kshetranath, Hindu, age 29	No	Many	Yes	No.	Fever off and on	No
125	Behari, Hindu, age 30	No	Many	Yes	No	Fever off and on	No
126	Issuf, Hindu, age 4	No	Many	No	No	Fever off and on.	No.
127	Ibrahim, Mahammadan, age 35	No.	Many	No	No	Fever off and on	No
128	Kailash, Hindu, age 30	No	Yes	Yes	No	Fever off and on	No.
129	Surendra, Hindu, age 16	No	Many	Yes.	No	Fever off and on	Ringworm
130	Raju, Hindu, age 40	No	Many	No.	No	Fever off and on	No
131	Md Ruhulla, Mahammadan, age 24	Father	Many	Yes.	No	Fever off and on.	No
132	Doman, Hindu, age 35	No	Many	Yes	Yes	Fever off and on	No
133	Gurucharan, Hindu, age 30	No	Many	Yes	Yes.	Fever off and on.	Ringworm
134	Chandra, Hindu, age 35.	No	Many	No	No	Fever off and on	No
135	Baram Deo, Hindu, age 40	No	Many	Yes.	No	Fever off and on	Ringworm
136	Kalicharan, Hindu, age 40	Brother	Many	Yes	Yes	Fever off and on.	Ditto
137	Sadhu, Hindu, age 40	No	Many	Yes	Yes	Fever off and on	No
138	Debendra, Hindu, age 30.	Brother	Many	Yes	No	Fever off and on	No
139	Suren, Hindu, age 22. P C	No	Many	Yes	No	Fever off and on.	No
140	Monohor, Hindu, age 41 P C	No	Many	Yes	No	Fever off and on	No
141	Doben, Hindu, age 25 P C	No	Many	Yes	Yes	Fever off and on	No
142	Panna, Hindu, age 37 P C	No	Many	Yes	No	Fever off and on	No
143	Gouri Bala, Hindu, F, age 18	No	Many	Yes	Yes	Fever off and on	No

Duration	Where begun.	Condition of Inguinal Glands.	Character of Tumour	Date of Operation	Date of Discharge	Days in Hospital after Operation.	Weight of Tumour	Microscopic Examination of Blood	REMARK.
6 years	Scrotum	Not enlarged	Elephantoid	4 9-00	4 10 00	30 days	15 lbs.	Filaria not found	
15 years.	Scrotum	Normal	Lymph scrotum	12 9 00	15 10 00	33 days	10 lbs	Filaria found	--
9 years.	Scrotum	Not enlarged	Elephantoid	17-10 00	4 11 00	18 days	6 lbs	Filaria not found	
8 years	Scrotum	Not enlarged	Elephantoid	14 10-00	8-11 00	20 days	2 lbs	Filaria not found	
6 years	Scrotum	Not enlarged	Elephantoid	20 11 00	9 12-00	19 days	16 lbs	Filaria not found	--
10 years.	Scrotum	Not enlarged	Lymph scrotum	20 11-00	9 12 00	19 days	15 lbs	Filaria found	
13 years.	Scrotum.	Normal	Elephantoid	21 11 00	12-12 00	21 days	10 lbs	Filaria not found	--
9 years	Scrotum	Not enlarged	Elephantoid	26 9-00	19 11 00	23 days	10 lbs	Filaria not found	
15 years	Scrotum.	Not enlarged	Elephantoid	5 12-00			4 lbs.	Filaria not found	
4 years.	Scrotum.	Normal	Elephantoid	10 12 00	17 2-01	2 months 8 days.	4 lbs.	Filaria not found	Had hernia. Encysted hydrocele
20 years	Scrotum	Not enlarged	Elephantoid	11 12-00	23 12 00	17 days	4 lbs	Filaria not found	
14 years.	Scrotum	Not enlarged	Elephantoid	12 12 00	7 1 01	26 days	6 lbs.	Filaria not found	
16 years	Scrotum	Not enlarged.	Elephantoid	17 12 00	12 1 01	25 days	4 lbs	Filaria not found.	
4 years.	Scrotum.	Not enlarged	Elephantoid	18 12 00	9 1-01	21 days.	4 lbs	Filaria not found	
10 years.	Scrotum	Not enlarged	Elephantoid	22-12 00			4 lbs.	Filaria found	
12 years	Scrotum.	Normal.	Elephantoid	26 12 00	16-1 01	21 days	2 lbs.		--
10 years.	Scrotum	Normal	Elephantoid	7 1 01			16 lbs	Filaria found.	
15 years.	Scrotum	Normal	Elephantoid.	16-1-01			31 lbs	Filaria not found	--
3 years.	Scrotum	Normal.	Elephantoid	23-1 01			3 lbs.	Filaria not found	
3 years	Scrotum	Normal.	Elephantoid	25 1 01	9 2-01	15 days.	4 lbs.		
8 years	Scrotum	Enlarged	Elephantoid.	28 1 01			38 lbs.	Filaria present.	--
5 years	Scrotum	Not enlarged	Lymph scrotum	5 2 01			12 lbs.	Filaria present.	
8 years	Scrotum	Not enlarged	Elephantoid	31 1-01	14-2-01	15 days.	6 lbs	Not found	
3 years	Scrotum	Not enlarged.	Elephantoid	1 2-01			9 lbs.	Not found.	--
9 years	Scrotum	Not enlarged.	Elephantoid	4 2 01			36 lbs	Not found	--
3 years	Scrotum	Not enlarged	Elephantoid	7 2-01			6 lbs	Not found	
4 years.	Scrotum	Not enlarged	Elephantoid	15 11 99	26 11 99	11 days	4 oz.	Not found	
5 years	Scrotum	Not enlarged	Lymph scrotum	14-8 99	14 9 99	1 month	30 lbs.	Not found	
6 years.	Scrotum	Enlarged	Elephantoid	27 12 00	20 1 01	24 days	36 lbs	Not found	--
3 years	Scrotum	Not enlarged	Elephantoid	5 11 00	17 11-00	13 days.	12 ozs	Not found	--
1 year	Prepuce	Not enlarged	Elephantoid	16-2 01			6 lbs	Not found.	

MALTA FEVER IN THE SWAT VALLEY

By E O W GREIG, M.B.,

LIEUT., I M S

WITH a view to contributing to our knowledge of the distribution and prevalence of this disease in India, I think it may not be without interest to record the observations on three cases which came under my notice. In each case the diagnosis was made by means of the serum sedimentation test. Two of the cases have been under my observation in hospital, the third had been in hospital last summer suffering from fever, which was then diagnosed as remittent. I have lately been examining a number of such cases amongst the native troops in the Swat Valley to determine whether their blood reacted with an emulsion of the dead organisms of one of the following — *Micrococcus Melitensis*, *Bacillus Typhorus*, *Bacillus coli communis* (two varieties) and *Bacillus giertneri*, it was found that this case alone reacted to the *Micrococcus Melitensis* the other cases, about twenty-five, acting as excellent control experiments of the emulsion.

The cases occurred amongst the sepoy of the 29th Bombay Infantry. This regiment has been about two years in the Valley, and arrived from Hyderabad, Sind. The two cases in hospital differed somewhat as regards the clinical picture presented. At first sight they might have been regarded as fevers due to a malarial infection, but a careful examination of the blood was made on several occasions and failed to reveal the presence of the malarial plasmodium, and further the administration of quinine had absolutely no effect on the course of the disease. The first case, admitted on November 20th, 1900, was nearly two months in hospital, and was finally sent on sick leave. In addition to the fever the patient complained of severe neuralgic pains in the head, over the ribs and back, and profuse sweating at night, although the atmospheric temperature was low. He had no enlargement of the spleen or liver, and his lungs were normal. He looked distinctly ill even during the remissions. The fever, as depicted in the temperature chart, shows a distinct tendency to "undulation," at one point going remarkably low 95°. The blood was examined, at intervals, on four occasions and during that time the reaction gradually increased, and the last time it was taken was complete in 90 dilutions. It was interesting to note, that as the agglutinus rose the patient's condition improved. The second case occurred in December 1900. He is still in hospital, when he came in he chiefly complained of severe pains in his joints, and it was found, that both knee-joints and the right wrist-joint were swollen

red and tender to the touch. His spleen and liver were not enlarged and his lungs normal. His fever, as seen in his chart, shows periods of pyrexia and apyrexia alternating, the second attack of fever shows a gradual rise and fall. His blood was also examined and gave the reaction to Malta Fever. There was in this case also a distinct use in the agglutinating power of the serum, the last time it occurred in 120 dilutions.

The third case who was not under my observation during the fever gave a reaction in about 40 dilutions of the serum, but it is now some months since the attack so that probably the agglutinating power has in the interval fallen, as is not uncommon. The temperature chart shows the character of the fever. Quinine was administered in this case with negative results. Sweating was noted as a prominent symptom.

The method of sedimentation, which was adopted in all cases, was that devised by Wright of Netley. It was found that the extreme cold of thin tents at night retarded the reaction, and it was necessary to construct a small incubating chamber, with a temperature approximately at blood heat, in order to get more rapid and constant results.

It was instructive to note that as the agglutinating power of the blood rose the patient's symptoms improved, tending to support the view, which has not yet been definitely proved by experimental investigation, that the agglutins are an index of the amount of immunity. The agglutinating power of the blood has been graphically recorded in the first case to illustrate this fact.

In this disease owing to the clinical phenomena being often very variable the serum sedimentation test forms an excellent, in fact the only final means of diagnosis, and enables one to separate a fever which otherwise would probably have to be returned as "remittent."

In conclusion I desire to express my thanks to Major M. A. Kei, I M S, Medical Officer in charge of No. 50, Native Field Hospital, for permission to publish the cases, and to Captain George Lamb, I M S, Patel Research Laboratory, Bombay, for sending me the emulsions.

PROPHYLAXIS AND TREATMENT OF PUERPERAL SEPSIS — G. E. Shoemaker ("Therap. Gaz.," Dec 15, 1898) concisely summarises the matter when he remarks that four simple things, if universally and carefully used to day, would very nearly banish puerperal sepsis: (1) The hand scrubbing brush, (2) the mercuric chloride, or equivalent, solution for hands and external genitals, (3) the baked napkins, (4) the clean suit.

H. C. Coe ("Med. Rec.," April 8, 1899) adds that prophylaxis in obstetrics is nothing more than surgical asepsis. Every obstetric case should be an aseptic operation. This however, is often very difficult to carry out in private practice. — *Practitioner*

THE
Indian Medical Gazette.

MARCH, 1901

THE MALARIAL FEVER OUTBREAK IN
THE PUNJAB LAST AUTUMN

OUR readers are mostly aware that in the months of September and October last a very severe outbreak of malarial fever took place in many districts of the Punjab, and gave rise to a discussion in the lay newspapers as to the possibility of the mosquito theory of malarial infection being competent to explain it

In our last issue we gave information as to the prevalence of mosquitoes to an unusually late period in the cold weather in certain Punjab districts. We are now enabled by the kindness of Lieutenant-Colonel C J Bamber, R.M.S., the Sanitary Commissioner, Punjab, to make a statement on the great prevalence of malarial fever during the last four months of 1900. Lieutenant-Colonel Bamber has been on tour all through the affected districts, and has no doubt that the fevers which were the cause of so much sickness and mortality were truly malarial.

The following figures show clearly the very high death-rates which prevailed during last autumn in that province. In September 1900 the total deaths from all causes in the Punjab were 96,795 and in October 164,120, or rates per mille of 57 and 94 as compared with rates of 38 and 31 in the two previous years. In October the death-rates were excessively high in the following districts: Karnal, Umballa and Ferozepore. In Karnal it rose to no less than 207 per mille, in Umballa to 200, and in Ferozepore 192. It was also extremely high in many other districts, viz, Hissar, 165 per mille, Ludhiana, 152, Gurdaspur, 139, Sialkote, 115, Hoshiarpur, 115, Lahore, 103, and in five other districts the death-rates varied from 74 to 97 per mille.

As will be shown below this death-rate followed in this year as in others an abnormally excessive fall of rain. In all the districts in which the rise in mortality was excessive, the rainfall registered in the third quarter of 1900 was considerably above the average, and as is the rule in the Punjab a very heavy rainfall is followed by a very heavy death-rate from

malarial fever. That this mortality followed closely upon an abnormal rainfall is clearly shown in the subjoined table for the nine districts most severely affected —

DISTRICTS.	DEATHS FROM FEVER IN			
	July	August	Sept	October
Karnal	2,023	2,124	6,550	12,688
Umballa	980	1,389	4,039	11,202
Ferozepore	1,618	1,732	4,147	12,355
Hissar	3,613	3,017	4,568	9,969
Ludhiana	1,142	1,480	2,904	6,471
Gurdaspur	1,095	1,399	4,152	8,291
Sialkote	1,655	1,810	4,418	8,560
Hoshiarpur	1,078	1,203	3,558	7,862
Lahore	1,998	1,957	2,943	7,125

The above table shows that the deaths registered in October in Umballa district were eleven and a half times higher than the numbers recorded in the previous month of July, in the other districts the mortality in October was from six to eight times that of July.

Appalling as the mortality was in October 1900, it was not so high as in the very unhealthy years 1890 and 1892. In 1892 the death-rate in Gurdaspur district rose to no less than 237 per mille and in Sialkote to 225, while in 1892 the Sialkote rate rose to the terrible figure of 391 per mille per annum, Gujranwala 307 and Gujrat 269, and (just as in last autumn) in the year 1890 the death-rates from fever rose enormously in the months of September and especially October, and in each of these districts the rainfall in 1890 (last quarter) being double the average rate.

These figures show only too clearly the terrible sickness and mortality from malarial fevers, the deaths from plague and cholera even at the height of their epidemic prevalence shrink into insignificance compared with such figures.

It is little wonder then that the lay public hearing of such tremendous mortality from malarial fevers hesitate to ascribe it to such an insignificant insect as the mosquito.

A little consideration however will show that the mosquito theory of malarial infection finds no insuperable difficulties in explaining the mortality. It will be remembered that the period of the September equinox was waged to 23rd September very heavy 19th century almost the whole of North and long one whole districts of the Punjab perhaps most bitter. The marked and excessive champion of the change

fevers took place within a few weeks of this widespread flooding. It is not difficult to see how that in the usually dry Punjab such universal floods must have left myriads of pools and puddles for the malarial mosquitoes to breed in. The close ill-ventilated and crowded mud-walled houses of the inhabitants of the Punjab afford the very best dwelling places for the anopheles, which are constantly present in these months in the Punjab, and in the past year persisted to a later date than usual. There is always a certain amount of malarial fever in these districts in the driest of years, so that when the mosquitoes began to breed in their millions they had ample material on which to work.

It is apparent therefore that an abnormal rainfall is the most important factor in the production of malarial fevers in the Punjab. As Celli, however, has pointed out (Malaria, p 162, &c) other meteorological factors and conditions of the soil must be taken into account. In some wet districts a heavy rainfall swamps and drowns the mosquito larvæ, whereas in dry districts a heavy rainfall would leave an unusually large number of pools, ponds and puddles for the anopheles larvæ to flourish in.

The question of rainfall as it affects both malarial fever and mosquito prevalence is one which needs much further examination in India, and we hope that some of our readers will follow up the subject.

CELLI'S NEW BOOK ON MALARIA.*

It is well nigh impossible in the limits of a single notice to give an adequate account of the vast amount of useful information on the subject of malaria which Professor Angelo Celli has given in his new work entitled *Malaria according to the new researches*.

We have frequently had occasion to refer to Celli's work on malaria and we do so with the more pleasure as Celli, more than any of the other recent Italian and German writers on malaria, is able to see and acknowledge the pioneer work of Ross, Manson, and other British writers.

We shall only endeavour to briefly run through the contents of this valuable book, with the object of strongly commending it to the attention of our readers.

The work, which is excellently translated by Dr J J Eyre, of Rome, begins with a history of malaria in Italy and shows that even in the apogee of the Roman power the Campagna was, even as it is now, devastated by malaria. Since the dawn of history malaria has annually cost Italy incalculable treasure.

The volume is not divided into chapters but into sections and parts. The next section gives a lucid account of the various parasitic diseases, akin to malaria, in other animals, and these portions are admirably illustrated. Celli concludes that "endoglobular parasiticism is, consequently, very diffused in the animal kingdom, from the batrachia to man." The next section deals with human malaria, and concludes "that it is now proved beyond doubt that the cycle of perfect life, that by which the species external to man is assured, is completed by the hæmosporidia of human malaria in the intestine of the mosquito." The sources of malaria are therefore man and the mosquito, and so far no other animal has been shown capable of taking the place of the mosquito in its relation to human malaria. Celli here however makes a mistake in trusting Grassi to the effect that the distribution of malaria is *pari passu* with that of the anopheles. As we have shown in another column Nuttall has definitely disproved this statement. The relation of water, and soil, to malaria is then discussed, and it is shown that these are only of importance in that they afford breeding places for the mosquito.

The section which deals with the life of the malarial germs in their environment is very good, and gives much information as to the habits and life history of the anopheles and other mosquitoes. The question of air as a vehicle of malaria is discussed, and it is shown that "malaria is an eminently autochthonous or local epidemic, and is only transmitted to a limited distance in any direction." The effect of the winds is variable, light winds may sometimes cause the diffusion of mosquitoes, but the fragile mosquitoes do not resist strong winds and they usually take refuge in their diurnal habitations when such breezes blow. Celli also states his belief that the path of penetration of the malarial germs into the organism is the skin, "bitten by the proboscis through which the infected mosquito inoculates its sporozoites." It is also noted that the anopheles, while flying,

* Malaria according to the new researches by Professor A. Celli. English Translation, Longmans Green & Co, 1900. Price 10s 6d.

does not make the humming sound, and that their bites are less irritating than those of the *Culex*.

It is satisfactory to see that on the subject of malarial immunity Professor Celli is less dogmatic and more intelligent than Professor Koch. He devotes several pages to the discussion of this question, and shows that the natural relative immunity of some races is in part the result of experience, and amounts to no more than being able to live (not without sickness) in malarious places where new comers would speedily die. He also mentions a few cases where a considerable degree of immunity from subsequent attacks resulted from a recovery from advanced malarial cachexia. Artificial immunity he concludes at present has not been obtained, but he gives certain experiments which seem to show that a degree of immunity can be obtained against *experimental malaria* by the use of eucinin and methylene blue.

We are obliged by considerations of space to omit reference to a large number of subjects of great interest and importance in this book.

The relations of malaria to rainfall and to rice-cultivation are also fully treated, and experience of Italy in these respects much resembles that of India.

In conclusion we can strongly commend this book to the attention of our readers as containing in small compass a very full discussion of the many problems of malaria, a subject of as much importance to us in India as it is to the inhabitants of Italy.

LONDON LETTER

THE NINETEENTH CENTURY

THE dawn of a new century has taken place very quietly. Resumés of the events of the past century and reflections thereon have appeared in plenty and some forecasts have also been made of the new century. The *British Medical Journal* devoted its last number to a series of articles, contributed by selected writers, sketching the state of the medical profession and of medical service in the year 1801 as contrasted with 1901. The comparison is a profoundly interesting one. The *Lancet* produced its usual *annus medicus*, and contented itself with a bird's-eye view of the achievements of the century. These were made the theme of several of the

addresses delivered at the Ipswich meeting of the British Medical Association. Anæsthetics, antiseptics and bacteriology are generally singled out as the most striking products of medical discovery in the Nineteenth Century, but they do not represent the fundamental change which has taken place in medical thought and medical practice during that epoch. The key to this change is undoubtedly the altered conception of the nature of disease, which is now recognised as a disturbed or disordered physiology—a dislocation or madness of the natural processes of life due to a want of harmony between the subject and the environment. Disease is no longer looked upon as an entity, a sort of demon or demoniacal possession, which has to be expelled, nor is it a peccant humour, nor a misdirected motion nor an angry anima. The present theory of disease contemplates the subject as its central and essential element and the reaction of the subject to a noxa as its reason and purpose. The *Vis Medicatrix Naturæ* has accordingly acquired a different meaning and character and the task of the physician is to anticipate or remove the cause of disturbance and to restore the outraged and militant forces and faulty metabolism of vitality to quiescence and harmony—to assist nature in short in its recuperative efforts.

THE GREAT CHANGE IN PRACTICE

As a natural consequence of this altered notion of the nature of disease has occurred a striking revolution in practice—the substitution of an expectant and restorative treatment for a depletive and spoliative. This revolution constitutes to my mind the most notable outcome of medical progress in the nineteenth century. It was accompanied as all revolutions are apt to be, with controversy and warmth. But the curious thing is that the conservative party did not advocate or fight for the retention of the old plan of bleeding, blistering and purging. They accepted the new treatment, but contended that it was rendered necessary by a change of type in the processes of life and disease, whereby both had assumed an asthenic character demanding support instead of a sthenic necessitating repression as in old times. The war which was waged in the second quarter of the nineteenth century regarding this issue was a hot and long one. In Edinburgh, where it was perhaps most bitter and keen, Alison was the champion of the change

of type view and Hughes-Bennett of the view that the change was one not of the nature and type of disease, but of our conception of pathology which had become more accurate and rational. In no class of diseases has this change of practice been so beneficial as in tropical diseases. I have lately read with great pleasure, a short sketch of the life of Edward Hare of the Bengal Medical Service, published by his son, Major E. C. Hare, I. M. S., in which a most interesting account is given of the change in the treatment of tropical fevers, which Hare took such a prominent part in producing.

The change consisted in the use of quinine and generous dieting in substitution of venesection, calomel salines and starvation. The treatment of dysentery, hepatitis and sunstroke has undergone a similar reform. In a very interesting medico-topographical report on Rajputana, recently compiled by Colonel T. H. Hendley, C. I. E., I. M. S., and published by the Foreign Office, there is a most instructive collection of papers, regarding the outbreak of bubonic plague, which occurred at Pali and other places, in Rajputana, in the year 1837*. Assistant-Surgeon Irvine recommended the following treatment: "On the first attack, the more robust men should be bled from the arm in a sitting posture to a moderate extent, till perspiration appears on the forehead and the headache is diminished, an emetic should then be given, after which, if the patient has not been spontaneously purged, a dose of calomel, followed some hours after by a moderate laxative, should be administered. The weaker men, women and children should have leeches applied to the temples in proportion to the ages, and severities of headaches, after which similar treatment of an emetic and mild purge." This "active" treatment of a putrid and exhausting pyrexia presents a strange contrast with the nourishing and stimulating system of the present day. The equally collapsing and deadly yellow fever of the West Indies was "treated" almost exactly on the same lines.

THE DEMISE OF THE "PATHIES"

THE rise of what may be termed physiological pathology has dealt a death blow to the "pathies," which loom so largely in the medical annals of the nineteenth century. If the law of disease is merely the law of health gone out of gear, it is quite as sane to look for a special dominant

law of morbid action as for a special entity sub-lying disordered vitality. The yearning for a general principle to cover and connect all pathological phenomena has always exercised a great influence over medical thought, and the possession of a key to morbid manifestations and to means and methods of restoring these to sanity has gratified this longing, and removed doubts, smoothed difficulties, and surrounded practice with an air of principle, simplicity, finality, comfort and satisfaction. But the serene atmosphere of the "pathies" has proved a fool's paradise, and it has become certain that the only law and principle or rather laws and principles, explaining pathogenesis and guiding therapeutics are those that are found in a study of the correlations of the subject and environment in all their variations, detail, evolution and development.

THE GENESIS AND GROWTH OF SANITATION

THIS is also practically a feature of the past century. Preventive medicine and its practitioners have in reality only taken separate and prominent position during its last half of it. The same idea underlies this development as that of the new pathology, and the new therapeutics, namely the inter-action of the individual and the environment. It is not enough to treat the man and his malady, he must be safeguarded from the harm that comes to him from without. His normal life is conditioned and sustained by his surroundings, and his abnormal life owes its causation and character to a fault of adaptation or adjustment. All this sounds very simple and commonplace, but so absorbed were our forefathers by the study of disease as a sort of idiopathic phenomenon, that they failed to cultivate a systematic ætiology, or, to contemplate the human being as a product of evolution retaining those dependencies on which his origin and progress in the ascent upwards in the scale of organised creation vested. The discoveries of bacteriology have created not only a special pathology, but have also brought into requisition a special description of preventive and curative effort, in the development of which inherent and acquired adaptations, habituations, and powers of resistance, and recovery play a prominent part.

THE TWENTIETH CENTURY

At the rate of increasing progress and acquisitions observable in the past century, the coming

* See *Indian Medical Gazette*, Dec. 1900, p. 479—ED, I. M. G.

one ought to be exceedingly productive Will the historian of 2001 be able to point to a revolution similar to that which I have portrayed in this letter, or will the narrative of the century's achievements be one of simple elaboration on the lines laid down in its predecessor We must not be too sanguine or boastful If our ancestors in 1801 wrote of acrimony, cocochymy, ascescence, rancesence and so forth, as if they were things and not mere words, do we not in 1901 use terms such as toxin, antitoxin, alexin and agglutinin, to represent substances which are entirely hypothetical and invented to explain phenomena Assuredly our knowledge of both physiological and pathological chemistry is still crude and defective, to render it more definite and complete appear to me to be one of the chief tasks of the coming epoch

10th January 1901

K McL

Current Topics.

EXPERIMENTAL INOCULATION OF MALARIA BY MOSQUITOES IN INDIA

In our last issue we briefly mentioned that Captain C J Fearnside, I.M.S., of Rajamundri, had inoculated himself experimentally with malarial fever by means of the anopheles Captain Fearnside has had many successful experiments of this nature, 7 out of 8 of which have succeeded in men who volunteered The following are briefly the facts of his experiment in his own person Previous history, certainly no malarial or other fever for the past nine years In 1891 he had severe malarial fever and none since On 17th December 1900 several anopheles (of a light fawn colour) were fed on the blood of a person known to be affected with spring tertian fever On the 12th day, 29th December, two of these infected mosquitoes were made to bite Captain Fearnside's arm The presence of zygoteblasts in the veneno-salivary glands was verified by microscopic examination Other infected mosquitoes also bit him on 1st January and 8th January 1901, on January 12th, 14 days after the first bites by infected mosquitoes, he felt "seedy," on 14th January headache, lassitude and body ache was marked, evening temperature 101.2 F Blood examination on 13th January and 15th gave negative results, on 16th there was a rise of temperature and a heaviness in left side (spleen), on 17th he was fairly well, but on 18th he felt distinctly ill, and on examination of his blood there were found much pigment in the leucocytes, young spring tertian hæmæmæbae, and pigmented spheres The fever lasted

all night, and he was too ill to work on the 19th On that day the blood examination showed flagellated spheres very numerous, macrogametes, pigmented spheres, spherules, and pigmented phagocytes and leucocytes Up to the date of writing the letter to us, 21st January Captain Fearnside still felt unwell, and the blood examination on this day gave negative results

There can be no doubt of the genuineness of this experiment, or that it was produced by the infected mosquitoes We are glad to state that Captain Fearnside has taken plenty of quinine and is now none the worse for his scientific experiment We may add that full details of these experiments will appear in the next issue of the "*Scientific Memoirs of Medical Officers of the Army of India*," which may soon be expected

ENTERIC FEVER AT QUETTA

In the latter half of 1898, Quetta was visited with a severe epidemic of enteric fever, the total number of cases amounting to 216 An exhaustive enquiry was held by a committee specially appointed for the purpose, and subsequently an independent investigation was made by Major A M Davies, R.A.M.C. Numerous recommendations were made, and important improvements effected in the sanitary condition of the station During 1899 there were very few cases, and with the exception of a small localised outbreak of six cases in January, the year 1900 remained practically free from any incidence of the disease until August The four months from August to November have been marked by widespread prevalence, amounting to 121 cases This has been most disheartening, considering the efforts that have been made to bring Quetta into a satisfactory sanitary condition, and the large sums that have been spent for that purpose Contrary to the experience of 1898 (and of most previous years), the right Infantry Lines, occupied by the Suffolk Regiment, have suffered more than the left Infantry Lines, occupied by the Wiltshires the numbers of cases have been 65 for the former, and 50 for the latter, while the Royal Artillery, that suffered so severely in 1898, have this year only had seven cases It is noticeable that one marked insanitary condition that existed in the former year, and was considered to be the principal cause of that epidemic, has in the intervening period been removed the filth trenches, situated to windward of the left Infantry and Artillery Lines, have ceased to be used, and the surface of the ground has been effectually purified It appears reasonable to suppose that the comparatively light incidence of the disease in these lines during 1900 (63 cases as against 160 in 1898) has been due to the removal of this cause But the prevalence of enteric throughout both British Infantry Lines is difficult

of explanation. No especial bungalows have been attacked, all furnishing a nearly equal proportion of cases. The general sanitation of these lines is said to be excellent. It has been thought that infection had been contracted from insubstantial refreshment houses in the native town, but we have not heard of any proof being afforded as to this mode of causation, nothing beyond a general suspicion to that effect, which is not unreasonable. Another not unlikely mode of spreading infection has been suggested, viz, the latrine arrangements for the native population of cantonments, this population is very large, some 8,000 or 9,000 or more, the ordinary moveable latrine is in use, but owing to the scarcity of space, frequent periodical moving is impracticable, and owing to want of water, no cropping of the soil on which they stand has been carried out. This pattern of latrine certainly does lead to fouling of the soil under such conditions, and in the extremely dry climate of Quetta, with its frequent dust-storms, it is possible that conversion of the polluted dry soil into dust, and its rapid diffusion throughout barracks, may account for faecal pollution of food supplies. Even breathing such polluted air might conceivably suffice to spread the disease, while the swarms of flies that constantly infest Quetta during the hot weather would find much faecal matter on which to fatten, and thence convey coliform bacteria to cookhouses, &c. Majors Davies and C. R. Elliott, R.A.M.C., have been deputed to make bacteriological examinations, &c. it is to be hoped that the result of these will throw some light on the causation of this epidemic.

THE STANDARDISATION OF PLAGUE PROPHYLACTIC

An important document is published in the *Bombay Gazette* (January 2nd, 1901) on the manufacture of the plague prophylactic in the Research Laboratory, Bombay. In the first half of 1900 over 600,000 doses were prepared or 2,139 brews. Out of these, 157 brews were rejected before they reached the bottling room. Ten days after bottling samples of each brew were tested, and only 1 in 500 rejected as contaminated.

As regards standardisation, a point raised in the Plague Commission's Report (*I M G* of 1900, p. 141), it is stated that there is—

"No likelihood of a plan of standardisation being ever devised which would fulfil the desideratum of causing, at the same dose, the same elevation of temperature or the same local or any other reaction in every case. This rule is to be completed by the statement that there is no possibility of knowing for certain with regard to the same individual how he will react to the same dose on different occasions, even when inoculated under apparently quite comparable conditions. The rule laid down for the use of the plague prophylactic, and calculated to obviate excessive variation of effect, consists in administering to individuals two injections,

one, a preliminary, with a tentative (reduced) dose, which should show the peculiarities of the subject, and the other, a final one, to be regulated according to the result of the first inoculation."

The report also shows that experiments on animals can only give approximate and very limited information as to the reaction of the prophylactic in man. In illustration of which are quoted the results of the inoculations against enteric fever in the persons of the men of Lumsden's Horse on their way a year ago to South Africa. The material used on that occasion was prepared by Dr. Neild Cook, and standardised upon the plan of taking for the dose in man the minimum amount which would kill 100 grammes of weight of guinea-pig. Of the 26 men of Lumsden's Horse who were thus inoculated, Dr. Arthur Powell, their Medical Officer, reported as follows—

"All but one had rigors, all but 2 vomited, 6 had choleraic symptoms, vomiting, diarrhoea and collapse. Fever was only in few cases under 103°, and ranged up to 106° F when taken early in the morning. In all, the pain is exceedingly severe, and is not diminishing, in some cases rather spreading. Most feel pain and have enlargement of the axillary glands, two or three in groin also. In many the puncture looks inflamed, and the swollen area, usually the size of one's hand, has a red blush."

The material used on this occasion was free from all contaminations, and Dr. Cook concluded that "this method of standardisation appears to be unreliable and even misleading."

Another restriction is pointed out by Mr. Haffkine, as a result of an extensive trial of his prophylactic by Major Andrew Buchanan, I.M.S., at Nagpur Central Jail, this is, that as the hot weather increases, the strength of the prophylactic is apt to get weakened. Mr. Haffkine concludes that it will always be necessary for the operator to watch the effects of the inoculation and to regulate the dose in accordance with his observations.

THE JOURNAL OF HYGIENE

WE strongly commend to the notice of our readers the first issue of a new *Journal of Hygiene*, which is intended and seems certainly destined to become the leading Journal in the English language, for the publication of original work in Hygiene. It is published at the Cambridge University Press under the Editorship of Dr. G. H. F. Nuttall, in conjunction with Dr. John S. Haldane, Lecturer on Physiology at Oxford, and Dr. Arthur Newsholme, D.P.H., the well-known statistician and Medical Officer of Health at Brighton.

Dr. Nuttall is well-known as the Lecturer on Bacteriology and Preventive Medicine at Cambridge, and as the author of numerous scientific articles to the medical press of England, America and Germany. The Editors have also secured the assistance of a long list of collabor-

atois, including names like Lord Lister, Clifford Allbutt, Councilman, Klein, Manson, Osler, Sir M. Foster, Sir J. Buidon Sanderson, Theobald Smith of Harvard, W. H. Welch of Johns Hopkins University, Professor A. E. Wright and many others, among whom we may mention the following connected with India and the services, viz, Colonel J. Lane Nottter, late of Netley, Mr. E. H. Hankin of Agra, Major Ronald Ross, Major A. M. Davies, R.A.M.C., of Simla, and Major W. J. Buchanan, I.M.S.

The new Journal is intended to serve as a focus to English-speaking investigators for work in all branches of Hygiene and Preventive Medicine.

The first number is a good one, and contains the following contributions: (1) The Geographical Distribution of Anopheles in relation to former Ague in England, (2) the Structure and Biology of Anopheles with two plates, by the Editor and two others, (3) Pathogenic Microbes in Milk by E. Klein, (4) Industrial Lead Poisoning by Dr. Legge, (5) A method of determining CO_2 in air by Prof. Haldane, (6) The red colour of Salted Meat by Prof. Haldane, (7) Inhalation of Ethylene by Lorrain Smith, (8) Toxins and Immunity by Prof. J. Ritchie, (9) Isolation Hospitals and Scarlet Fever by Dr. Newsholme. We notice at length below the most interesting and valuable article on the relation of the Anopheles to the Agues which formerly prevailed in England.

The new Journal bids fair to become to English-speaking scientific men what the *Archiv* or the *Zeitschrift für Hygiene* is to the Germans. We wish it every success, and recommend it to the attention of our readers.

THE DISTRIBUTION OF THE ANOPHELES IN ENGLAND

In a very interesting article in the new *Journal of Hygiene* Dr. Nuttall, Dr. Corbett, and Mr. Strangeways-Pigg draw the following conclusions from a survey of the question of the present distribution of the anopheles in England and the former prevalence of ague in that country—

1 The disappearance of ague from Great Britain does not depend upon the extinction of mosquitoes capable of harbouring the parasites of malaria.

2 Three species of anopheles (*A. maculipennis*, *A. bifurcatus*, and *A. nigripes*) are to be found in Great Britain in all districts which were formerly malarious but also in places where there is no record of a former prevalence of ague.

3 The anopheles to day are most numerous in low lying land containing many ditches, ponds, and slowly running water, and corresponding to the districts where ague was formerly prevalent.

4 Since the disappearance of ague does not depend upon the extinction of anopheles, it is probably due to several causes operating together.

(a) A reduction in the number of insects consequent on the drainage of the land.

(b) Reduction in the population in infected districts as the result of emigration about the time when ague disappeared from England.

(c) It is possible that the use of quinine has reduced the chances of infecting the anopheles through checking the development of the parasites in the blood of subjects affected with ague.

5 The coincidence of the geographical distribution of ague and anopheles as claimed by Grassi for Italy, and as probably holding good for other parts of the world is hereby disproved for England, and consequently the generalisations are proved to be premature where by he excludes other blood sucking insects from being hosts of the malarial parasites on the strength of this supposed geographical agreement.

6 Since the geographical distribution of anopheles in England is wider than the former distribution of ague in this country, we are forced to conclude that this is not a matter of the geographical distribution of anopheles as much as of their numerical distribution.

7 Our observations having proved the existence of anopheles in non malarious districts, we believe they will explain the occasional occurrence of ague in out-of-the-way places without making it necessary to assume that malaria bearing mosquitoes have been freshly imported, for given suitable conditions of temperature and the requisite number of anopheles a malarious subject coming from other parts might well infect the local insects, which in turn would spread the infection to healthy persons.

8 We would suggest to those engaged in the investigation of malaria in other countries to search as carefully for the anopheles in non-malarious as in malarious regions. More data as to the number of these insects in various localities are certainly required, though we are fully aware that numerical estimates permit of a considerable degree of error. Nevertheless they would always possess a relative value."

THE LANCET ON OUR STONE NUMBER

THE *Lancet* (January 19th, 1901) in the course of a leading article on the "Modern Treatment of Stone in the Bladder" refers to the initiation of litholapaxy in children by Dr. D. F. Keegan in 1884 "then a Surgeon-Major in the Indian Medical Service," and proceeds as follows—

Much of the work which has led to these conclusions has been done in India, where there is an unrivalled field for the treatment of stone in the bladder. The frequency of vesical calculus in some parts of that country is very great, and it does not appear strange when the large population and the comparative scarcity of surgeons are considered that it sometimes falls to the lot of a surgeon in India to operate in several hundred cases of stone. In an interesting discussion on this subject which was held at the last meeting of the British Medical Association, it was maintained by some of the speakers that the stones in India were not of such firm consistence as those met with in East Anglia, and therefore that conclusions based on Indian experience were not applicable to calculi met with in this country. The opposite opinion was strenuously maintained by others at that meeting, and it may well be that though there is some difference in the hardness of these calculi the difference is but slight. A striking indication of the extent to which treatment of stone is required in India is afforded by the appearance recently of a special number of the *Indian Medical Gazette* devoted to the consideration of vesical calculus and its proper therapeutics. In this are printed articles by Dr. Keegan and others who have had much experience in this branch of practice, and many notes are also given on special points in connexion with lithotripsy. No

surgeon can doubt after reading our contemporary's special number that at the present time the safest and the most speedy method of removing a stone from the bladder in nearly every case is BIGELOW'S operation of lithotripsy"

THE ORIGIN OF PLAGUE IN CALCUTTA

THE following passage occurs in the Harben Lectures on Plague by Dr A Calmette (*Journal of State Medicine*, Dec 1900) Referring to the difficulty of diagnosing first cases of plague, Dr Calmette wrote—

"At Calcutta two doctors whose perspicacity it is only just to recognise Drs Simpson and Cobb, reported the presence of the plague bacillus in cases of inguinal ganglionic congestion, which had for some time been met with extraordinary frequency among the men of a certain regiment stationed at Hongkong during the epidemic of 1894"

There is some confusion here Dr W J Simpson, then Editor of this *Gazette* and Health Officer, Calcutta, and Lieut-Col Cobb, I.M.S., considered that the celebrated Howrah case was pestis ambulans, whereas Dr D D Cunningham and the Medical Board thought (in the Inspector-General's words) this case had a "clear and distinct history of venereal infection" The cases in the Shropshire Regiment, recently come to Calcutta from Hongkong, were reported upon by Major Skinner, R.A.M.C., they were either what Sheube calls "climatic buboes," or mild cases of ambulant plague No outbreak of plague, however, ever took place in this regiment

If we remember aught the voice of medical opinion was against the views of Drs Simpson and Cobb, and though Calcutta has since been infected with plague, it by no means follows that these disputed cases were of this nature

Dr Simpson in numerous lectures on plague since that day has naturally claimed that his original view was correct, but it is by no means a settled question, yet it has been quoted recently by Sheube and now by Dr Calmette as an example of pestis ambulans preceding an outbreak of real plague In this way is history written

ADDITIONAL NOTES ON MOSQUITOES

WE are indebted for the following note to Major P W O'Gorman, I.M.S., M.D., Civil Surgeon of Jhang, Punjab, which came to hand too late to be included in our note on the subject in last issue Major O'Gorman noted the prevalence of mosquitoes in Mian Mui from May till October 1900, and specially in August and September In Lyallpur (Jhang) they prevailed in large numbers even up to the beginning of December, but with the increasing cold they disappeared, and in January none were to be found In Benares Major O'Gorman found anopheles abundantly in a nullah which runs from the back of the Native Infantry lines to the Station Hospital, and also in a tank, where fish

abounded, to the south of Benares Cantonment Specimens sent by Major O'Gorman were identified by Lieutenant-Colonel Giles as follows—*Anopheles Rossi*, *A. fuliginosus*, *A. tipula* and also *Culex fatigans* and *Culex impellans* Fever prevailed extensively last autumn in the Jhang District

From Baghdad in Turkish Arabia Captain G Ramsay, I.M.S., the Residency Surgeon, sends the interesting observation that though some mosquitoes appear there in the hot weather they are not numerous Baghdad is a very dry region, and there are very few pools for mosquitoes to breed in Though he searched in many directions and examined all the mosquitoes he could catch, Captain Ramsay was unable to find a single specimen of the anopheles He also notes a singular absence of malaria in Baghdad, and is inclined to conclude that the anopheles does not exist in Baghdad or only in very small numbers

CAPTAIN S P JAMES, I.M.S., M.B., writes us from Ching Wan Tao, China, that No 61 Field Hospital is comfortably settled in that village The houses of the village have been converted into the hospital, the cold was intense, but the Chinese *kangs* make admirable warm beds They are made of earth, and run the whole length of the building, and are hollowed out with numerous channels or tubes which convey the hot air from a fire close by The temperature in December often fell to 20° or 30°F below freezing point Captain James states that the Indian troops were in good health, a few cases of pneumonia, and many of rheumatism and bronchitis, but little or no dysentery

IN an admirable lecture on enlargement of the prostate (*Lancet*, January 12th, 1901), Mr P J Feyer states that decided symptoms of enlargement of the prostate manifest themselves in natives of India as early as the age of 45 years, or some ten years before the usual time in Europeans

THE geographical distribution of Malta Fever has undergone great extension within recent years Its prevalence in India is now well known, and a recent paper by Dr R P Strong, Director of the American Army Medical Laboratory, Manila, shows that it is not an uncommon disease in Manila, in one week three cases were found, which gave marked reactions with the micrococcus in high dilutions (*Philadelphia Medical Journal*, November 24th, 1900) In another column we publish a note on some cases in the Swat Valley

IN the course of an article on the X-rays in South Africa, Mr J Hall Edwards, who was

radiographer with the Imperial Yeomanry Hospital, states (*Lancet*, 12th January 1901) that the usefulness of the X-rays was greater than he had ventured to predict and were second only to asepsis in surgery. "In future wars," he writes, "each base hospital must have its Surgeon radiographer, and a number of experts must be attached who can be sent with apparatus anywhere as circumstances may demand." In inexperienced hands he states that the X-rays are a source of great danger, as a recent case in London showed. An increasing number of medical officers must be taught this work.

THE *Polichinco* of December 29th contains a reply from Prof Grassi to Major Ross' recent letter in that Journal, in which Major Ross fairly claimed for himself and Dr Manson then share of the discovery of the metamorphosis of the malarial parasite in the mosquito. Certain Italian writers (with the notable exception of Celli) are almost as bad as Prof Koch in assuming the work of others (which they have only verified and amplified) as their own.

OUR attention has been called to a printer's error in a note on "Hæmorrhoids in India" in our November issue (p 447). The figures given in the table there printed for Madras refer to total operations for piles. The totals only are given as this is all the information vouchsafed in the Surgeon-General's Annual Return. From the special report of the Medical College Hospital, Madras, it is seen that 37 operations for piles were done, in 1899, as follows—24 by cautery, 12 by excision and 1 by ligature. It is desirable, we think, that details of such operations should be published in all the Annual Reports, and that important operations like those for appendicitis (for example) should be given under that heading, and not grouped under some vague general heading. The whole question of the proper classification of surgical operations stands in need of revision.

THE most common species of anopheles mosquito found at present in England is *A. maculipennis*, perhaps better known as *A. claviger*, and also called *A. quadrimaculatus* (Nuttall).

IN a recent issue we commented upon the association of dysentery with rheumatism. Mr F C Wallis, F.R.C.S., of Charing Cross Hospital, has called our attention to a paper written by him (*British Medical Journal*, Oct 6th, 1900) in which he points out that "cases of rectal ulceration are apt to get attacks of acute synovitis." He gives several cases of this association which he appears to have been the first to point out.

AN interesting account of Captain Lamb's serious personal experience of the efficacy of Calmette's serum in cases of cobra-bite appeared in the *Lancet*, of 5th January. Captain Lamb, I.M.S., points out that this antivenine is apt to deteriorate by keeping in this hot climate, and that fresh supplies should be kept in stock.

WE shall publish a case in which this antivenine failed to cure a case of Dabolia bite. Calmette apparently claimed that his antivenine was antidotal against the poison of both colubrine and viperine snakes, but Dr D. D. Cunningham, I.M.S. (*Scientific Memoirs*, IX, pp 1-30) and the late Dr Kanthack showed that Calmette's serum had no effect against Dabolia venom* (*See Allbutts' System*, Vol. II, p 838).

ALREADY we have received promises of support for our special ophthalmic number from a number of leading surgeons in all parts of India. The special number will probably appear in June, and we would ask that all papers and replies be in our hands early in April.

WE are glad to see that Major Ronald Ross is to preside over the Tropical Section of the British Medical Association Meeting at Cheltenham next July. We hope that he will be strongly supported by medical officers from India.

WE direct attention to the letter by Captain R. H. Elliot, I.M.S., on the much discussed question of Typhoid in Natives of India.

THE issue of the *British Medical Journal* for January 26th, 1901, contained a large number of very interesting articles on diseases of the tropics. The review in it of Lieutenant-Colonel Giles' book on Mosquitoes was written by W. S. Thayer of Baltimore, a recognised authority on Malaria.

WE were glad to see that our Bengali contemporary, *The Svastya*, or Journal of Health, edited by Dr Durga Das Gupta, M.B., in a recent issue had a series of admirable articles reviewing the question of mosquito malaria.

WE have received and shall shortly notice the third series of malaria reports of the Royal Society.

* We understand that experiments are at present being conducted in the Research Laboratory, Bombay, on this very point, to ascertain the efficacy, if any, of Calmette's antivenine against *Dabolia* poisoning.—ED, I M G

Reviews.

What to do in Cases of Poisoning —By WILLIAM MURRELL, M.D., F.R.C.P. Ninth Edition, London H. K. LEWIS, GOWER ST., W.C. 1900

The first edition of this little book was published in 1881, and new editions have been frequently demanded. It may be described as the house-physician's faithful guide and friend, and is a most useful and handy volume. The treatment of poisoning has undergone some changes of recent years, and these are incorporated in the present edition. In the treatment of opium, poisoning permanganate of potassium is recommended to be given by the mouth and not hypodermically. In addition to the antidote of acetic acid, white vinegar is advocated on the ground that it converts the morphine into a soluble salt. A useful section gives the supposed active ingredients of popular "patent preparations." There are a few misprints. On p. 159 nitrate is evidently meant for nitrite of amyl. The book is admirably suited to the purpose for which it was written.

The Essentials of Practical Bacteriology —

An elementary laboratory book for students and practitioners. By H. J. CURTIS

This little book is arranged in the form of lessons, and contains 133 illustrations of a useful nature. It comprises the course of study usually required for the diploma of public health, while sufficient details are given to make it eminently useful in the laboratory. Plummer's recent work on cancer, and much information on the parasites of ringworm are given, the latter being a subject which is worthy of investigation in India. Malaria is also more fully treated of than in most similar books, although the illustrations on this subject might have been increased with advantage. The differentiation of the bacillus coli communis from the enteric bacillus is well given, although the media of Capaldi and Proskauer are not included. A useful index completes an excellent little work.

Text-Book of Physiology, Vol. II.—Edited by E. A. SHAEFER, YOUNG J. PENTLAND

The first volume of this comprehensive text-book was issued in 1898, and we have found it of such great service as a work of reference on various occasions, that we looked forward to receiving the second volume with unusual interest. A brief study of the new volume has not disappointed our expectations, and that is saying a good deal. The text occupies 1,258 pages, in addition to which there is a most copious and excellent index, which runs to just over 100 pages. The illustrations number 449, many of which are original, and the others have

been taken from well known authorities on the different subjects treated of. Most of them are of a diagrammatic nature, or are from actual traces illustrating the properties of muscle and nerve. They are thus admirably adapted for illustrating a work of this nature.

The scope of this volume can best be indicated by the sections into which the work is divided, while the names of the different writers will alone be the best guarantee of the general excellence of the articles. The mechanism of the circulation of the blood is treated of by Dr. Leonard Hill, whose original work on the subject is well known. The contraction of cardiac muscle by Gaskell follows. Animal mechanics, together with, further on, the sense of taste and smell, are written by J. B. Huxley. The mechanisms of the respiratory system, of the digestive tract, the urinary tract, and of the generative apparatus are by E. H. Starling. Professor Burdon Sanderson writes on the properties of striped muscle. Francis Gotch on "Nerve" and on the physiology of electric organisms, difficult subjects which are ably handled and illustrated by very clear and simple diagrams. Dr. Waller's recent work on the effects of gases and volatile drugs on nerve are fully described here. Professor Shaefer himself contributes the articles on the cerebral cortex, and on the nerve cell, while the sympathetic system is from the pen of Langley. That on the spinal cord and the basal portions of the cerebrum is by Sherrington, who also treats of cutaneous sensations and the muscular sense, of all of which it is sufficient to say that they are worthy of the writers. Lastly vision is treated of by W. H. R. Rivers, and the ear and vocal sounds, by M'Kendrick and A. A. Gray.

This volume completes a work which has no parallel in the English language, and is more on the lines of Herman's classical "Handbuch der Physiologie," which has long since become out of date, and was never translated into English. Professor Shaefer is to be congratulated on successfully bringing to a termination his labours, and in having produced a book which worthily represents the modern British school of physiology, and must long remain the standard work of reference in the English language.

Vasectomy and Urethro-Stenosis.—By REGINALD HARRISON. London: J. and A. Churchill

This book is the outcome of requests that Mr. Harrison's recent contributions to the *Lancet* should be collected, and we are glad to have them in this form. The first half of the book deals with the enlargements of the prostate and their treatment, and Mr. Harrison classifies the enlargements under three pathological varieties, viz—

1. Erectile, in which the structure of the gland has become similar to erectile tissue as seen in other parts of the body.

2 Fibroid, in which from repeated congestion or inflammation the glandular tissue has been replaced by fibrous tissue, and in which pedunculated masses often project into the bladder

3 Adenomatous, in which there has been a localized overgrowth of glandular tissue which lends itself to enucleation

As Mr Harrison remarks, it is obviously unreasonable to expect that the one operation, be it perineal prostatomy, or perineal diamage, or suprapubic prostatectomy, or castration, or vasectomy, will be equally effective in all of these different pathological conditions. This was obvious as soon as the different forms of enlargement began to be recognized, but it was by no means obvious how they were to be distinguished clinically, nor does Mr Harrison contribute towards our enlightenment either by his remarks or by the numerous cases he gives as illustrations. In fact he has himself performed vasectomy where suprapubic prostatectomy was wanted and ultimately done. That Mr Harrison gives no indications for the differential diagnosis is the obvious criticism which suggests itself in connection with the first half of the book. If we could foretell in which cases atrophy of the prostate would follow on operation, we should be more grateful to the author for drawing attention to the influence which vasectomy exerts on the comfort of the patient in those cases in which, though the bladder walls have been irreparably damaged, reduction in size of the prostate renders catheter life easier. It would, as is pointed out by the author, be obviously better to anticipate events by vasectomy before the walls have been damaged by sacculation. It is to be hoped that in a future edition these indications will be clearly given, and many an old man thereby saved the tortures of catheter life.

The second half of the book deals with the remote results of the different operations for stricture of the urethra. It is pointed out that

1 Forcible dilatation yields permanent good results only in those cases in which the stricture has been efficiently ruptured without tearing the mucous membrane

2 Internal urethrotomy is permanently effective only when the wound heals satisfactorily, to secure which the cut made must be clean, not jagged, must be clean though the stricture, and must be well drained. Where the urine is more or less putrid from cystitis or other cause the wound will not heal well and therefore

3 External urethrotomy will under these conditions be more effective. The book is a brief summary of recent knowledge and well repays perusal.

Gynæcological Operations —By SKENE KEITH, M.B., F.R.C.S. (ED), illustrated with 44 figures. YOUNG J. PENTLAND, Edinburgh 1900. 8vo, pp 118

This little book deals with Gynæcological operations which do not necessitate cæliotomy

Its appearance is justified by the author by the following remarks in the preface —“Though medical books tend to grow larger and larger, yet it is often difficult to find in them what one wants at a moment's notice. The general knowledge which one acquires gradually in the course of practice, may enable one to come to a conclusion that an operation ought to be performed, but very precise information is required when one has actually to perform the operation. Frequently exact details are wanting. You are told to do this or that or the other thing. This is satisfactory enough when one is familiar with the subject, as one can then compare one's own knowledge with what has been collected together. An attempt has been made in this book to enter fully into what has to be done from the time that a Gynæcological operation has been decided on, until the patient has been discharged.” The author's aim has been to give an exact description of an operation as also to show that the majority of these are comparatively simple and do not require the assistance of four or five doctors and two or three nurses.

In the introductory chapter the author urges on the necessity of “special cleanliness.” If surgery is the object in life, the surgeon must give up something for it, for his hands require to be both soft and clean, and the author has no hesitation in saying that if anyone really requires to wash his hands for 15 minutes before operating, or assisting at any operation, he must be doing at other times some kind of work which in the interest of his patients he had better leave alone, as he must have made them unnaturally dirty. We are not such duty mortals as to require such a preparation. The author has no belief in a nail-brush for the hands. In the second chapter, the methods, instruments and appliances that may be required for any operation are considered. Dilatation of the uterus, trachelorrhaphy, colporrhaphy, removal of intra-uterine tumours, vaginal fixation, &c., are described in the subsequent chapters. The operations are illustrated by outline diagrams. There is no doubt that the author has been very successful in producing a book which is very useful and practical. The aim of the book —“how to do” and not “how it may be done” —has been admirably accomplished. The book will be of very great help to house surgeons in Gynæcological hospitals and to private practitioners interested in Gynæcology.

Current Literature.

MEDICINE

Pani Ghao, or “Sore Feet” of Assam Coolies —In *The Journal of Tropical Medicine* of December, 1900, there is an interesting article on this

subject by a nameless author who practised for three years in the Dibrugarh district. *Pani ghao*, or water sore, appears to be a serious cause of disability amongst the tea-garden coolies of Assam, because as many as 5 per cent of the working force may be incapacitated at a time between the months of May and October. The eruption is said to have a distinctive character, and from its position on appearance falls under one of three varieties—Vesicular or Pastular, (2) Herpetiform, (3) Interdigital. The first is the commonest, and is found on both the plantar and dorsal aspects of the foot. In the second form the vesicles occur on an inflamed base, and often group themselves so as to resemble the crests of a mountain range as depicted in a map. The third type is frequently the most troublesome, owing to its being complicated by obstinate ulcers or abscesses.

The writer states that this disease is found only in Assam, that it is more common in Upper Assam than in Sylhet and Cachar, and that it is far more prevalent amongst imported coolies than among the indigenous population. He states that the cultivators of Bengal suffer from the mild type of the interdigital variety alone, but practitioners in Eastern Bengal are familiar with the severe interdigital type associated with ulceration and abscess formation, and with a form of foot trouble not described in this article though arising under similar conditions, I mean greatly thickened horny soles with deep, painful fissures, ulcers and abscesses.

For the etiology the author postulates three factors—heat, rain, wet clayey soil, and adds that probably a fourth potent cause is the filth that abounds around the coolie lines owing to the insanitary habits of the people. To these he might probably have safely added the nitri-fying bacteria and the organisms in skin and sweat imprisoned for many hours daily by a coating or poultice of wet clay. A valuable prophylactic suggested is the use of the kurrums, or wooden clogs, but the majority of coolies refuse to wear them. At the larger tea factories zinc lined troughs with hot phenyle solution are provided for the patient to soak their feet in. The ordinary antiseptic lotions, ointments and dressing are used, also poultices made of pirohi leaves.

What becomes of Mosquitoes during the dry season?—By ST GEORGE GRAY, M.D., B.Sc.—*The Journal of Tropical Medicine*, May 1900.—Writing from St. Lucia Dr. Gray says that he examined dried mud and grass from a spot where there had been a pool some months previously, from the water of which he had obtained *anopheles* larvæ. The dried mud and grass were put in separate bottles and filtered watered was added to both. No trace of larvæ was got in the bottle containing mud, but half a dozen mosquito larvæ appeared in the other bottle. This indicates that certain species of *Culex* deposit their eggs on grass so situated, that the eggs can be washed into a pool by the first heavy shower. Consequently he recommends burning the grass round the breeding places of *anopheles*.

Forms of Tremor and their Clinical Characters—By R. T. WILLIAMSON, M.D., F.R.C.P.—*The Medical Chronicle*, October 1900.—In this article special attention is naturally given to the differential diagnosis of the tremor in paralysis agitans from that of disseminated sclerosis, but evidence of careful observation is apparent also in the description of the tremors associated with mercury, alcohol, and lead poisoning, with hysteria, old age, asthenia, Graves' disease, general paralysis of the insane, various gross lesions of the brain, hereditary tremor, tremor dating from childhood, simple tremor without discoverable cause or lesion, and the condition in myokymia. Figures are given of the number of vibrations per second in the various forms of tremor.

The writer groups these forms into three types (1) Tremor during repose of the limb, but ceasing or

diminishing on voluntary movement with attention, e.g., paralysis agitans (2) Intention tremor, occurring only on voluntary movement, and ceasing during repose, e.g., disseminated sclerosis, and several other kinds of tremor, at a very early stage occur only on voluntary movement (3) Tremor occurring during repose, but much more marked during voluntary movement, e.g., alcoholic, senile, asthenic, simple hysterical, &c., tremor. Graphic illustrations are given of tremor affecting handwriting and the power of drawing straight lines in different forms of disease. Dr. Williamson formulates three groups of tremor according to the writing—(1) In disseminated sclerosis the handwriting is greatly affected. If the tremor be well marked, writing is often quite impossible. At an early stage of the disease, even when the tremor is only very slight, the writing is affected markedly. It is jerky especially at the end of a word or sentence. The letters show coarse jerky irregularities and are badly shaped. But the separate lines do not usually show fine wavy irregularities, for short distances they are fairly steady and without tremor, then there is a sudden jerky irregularity. (2) In paralysis agitans the opposite condition is met with. The tremor is often very advanced before there is much affection of the handwriting. The patient is obliged to write more and more slowly, but it is often surprising how well he can write, with care, even when the tremor is advanced. The general form of the letters is good, and the general character of the writing regular, but the separate strokes show fine wavy irregularities. At first these are seen only by a lens, later they are evident to the naked eye, but are small and fine. The wavy fine indentations in the strokes often occur at fairly regular intervals. This is the character of the writing in many cases of paralysis agitans, even when the tremor and other symptoms are very marked. But sometimes the writing is more irregular, especially at a very advanced stage of the disease. (3) In most of the other forms of tremor the writing is markedly affected, except when the tremor is very slight. The form of the letters is more irregular than in paralysis agitans, but not so coarsely irregular as in disseminated sclerosis. The separate strokes show coarse wavy irregularities, much coarser than those of paralysis agitans. This is the character of the handwriting in senile, alcoholic and neurosthenic tremor, and also in the tremor of Graves' disease.

Notes on Diabetes—By J. B. HERRICK, M.D.—*The American Journal of the Medical Sciences*, July 1900. That the occurrence of tube casts in connexion with diabetic coma is not merely an adventitious phenomenon has been pointed out by Williamson in his work on Diabetes Mellitus published in 1898, and reviewed in this Journal. But Külz and Aldehoff were the first to notice that during or just preceding an attack of diabetic coma casts may appear in extraordinary numbers. The casts may appear 24 hours before the onset of the coma, and thus serve as a warning. If urine taken as coma approaches be allowed to stand, a light grey, or yellow sediment forms, which consists almost entirely of short, broad, finely granular casts. There is no apparent relation between the amount of albumin and the number of casts in these cases. Cases are occasionally met with in which diabetic urine has for a time an unusually low specific gravity, in which there is no sort of proportion between the amount of urine passed, the percentage of sugar, and the specific gravity. Consequently even urines with abnormally low specific gravities should be examined for sugar, especially in the case of candidates for life insurance.

The low specific gravity in diabetic urine may be due to the polyuria of interstitial nephritis. In fact many observers suspect incipient interstitial nephritis whenever they find the specific of diabetic urine below 1020. Drinking excessive quantities of fluid may also lower the specific gravity. Dr. Herrick has met with cases of diabetes mellitus in which the urine had specific

gravities of 1004, 1012, 1015 to 1019 Kùlz recorded a case with 1002 amongst a series of 224 cases in which 27 or 12% showed at times a specific gravity of less than 1010 Naunyn found a specific gravity of 1003 in a case with over 1 per cent of sugar

Protargol.—*The Edinburgh Medical Journal*, March 1900 Mr Sydney Stephenson, F.R.C.S., recommends protargol as a substitute for nitrate of silver and other caustic or astringent solutions in various external eye diseases, as being less painful, less apt to deposit and cause pigmentation, and as equally efficacious. In acute conjunctivitis due to gonococci he applies a 50 % solution twice daily, using weak antiseptic cleansing lotions frequently between the applications. Corneal complications are no contra indications to the use of protargol, they are rather an indication for pushing it. In severe mucopurulent ophthalmia due to the Koch Weeks' bacilli protargol solutions of 10, 20 or 50 % are serviceable. Protargol in 5 to 10 % solution is particularly useful in dacryocystitis for washing out the sac after the canaliculus has been slit, and a spray or douche of 3 to 5 % is good for the nasal mucous membrane

The differential Diagnosis of Gout, Rheumatism, and Rheumatoid Arthritis—By ARTHUR P. LUFF, M.D.—*The Edinburgh Medical Journal*, March 1900 Rheumatism may manifest itself in the acute form as rheumatic fever, in the chronic articular condition, or in a non arthritic variety as chorea, an erythema, fibrous nodules, pericarditis or endocarditis, Salicylate of soda is a good rough test in the chronic articular type. If there is no response, then the existence of rheumatoid arthritis or gout may be surmised. In rheumatism affecting joints there is not the same tendency to permanent deformity that occurs in rheumatoid arthritis. The fitful affection of various joints, the fairly rapid subsidence of the joint swellings, the association of muscular pains, of erythema nodosum and the response to salicylates all tend to make the differential diagnosis of rheumatism a fairly easy matter.

Mistakes are often made between rheumatoid arthritis and gout, though their distinguishing characters are sufficiently obvious.

Rheumatoid arthritis, arthritis deformans or rheumatic gout is commoner in females, affects the poor and ill nourished, is improved by good diet, and is insidious in onset. It generally begins without much pain in one of the thumb joints and later spreads rapidly to the other joints of the hands, at first there is no obvious swelling and no redness. The temporo maxillary articulation is apt to suffer in this disease and not in gout, also there is a remarkable symmetry in the smaller joints of the hands being attacked which does not obtain in the latter disease. In rheumatoid arthritis sodium bicarbonate is not found in the joints or in the blood.

Gout is more apt to occur in males, among the well-to do and well nourished, and a spare diet is indicated. Its onset is sudden and obvious, commencing most commonly in the great toe, or in some part of the foot, with obvious redness, swelling, and a shiny appearance of the skin over the joint.

Its onset is sudden and severely painful, and sodium bicarbonate exists in both the joints and the blood.

The etiology of rheumatism is obscure, but Dr Luff considers acute rheumatism as an infectious disease. He has no belief in the uric acid or lactic acid theories, but he thinks that some toxic product, such as a fatty acid, is generated and set free in the system, and causes the muscular pains and articular inflammations. Sodium salicylate can unite with fatty acids, and eliminate them from the system as sodium salicylarate.

There is no doubt about the etiology of gout which is due to the accumulation of uric acid in the system, first in the form of sodium quadriurate—an unstable body, and afterwards as the bicarbonate.

The nervous theory of the etiology of rheumatoid arthritis Dr Luff brushes aside, and he shows good reason for his belief in its being an infectious disease due to micro organisms settling in the joints.

There is no marked association between gout and rheumatoid arthritis, though a person suffering from the latter may develop gout after a prolonged course of rich living and much wine. Here, however, it is merely a complication, and the one condition does not pre dispose to the other. Rheumatism, on the contrary, predisposes to rheumatoid arthritis, because the patient's general condition is reduced below par, and the nutrition of his joints is impaired so that micro organisms may flourish in them if they can get access to them.

D. M. MOIR

Correspondence.

THE FORTHCOMING SPECIAL OPHTHALMIC NUMBER

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Two features of eye work in India appear to me especially striking, they are (1) an enormous waste of material, and (2) the unscientific character of the work done. How is it that in cataract extraction every step and every variation in the operation has been worked out in Europe and America, without reference to practice and opinion in this country, where individual Surgeons perform four or five times the number of operations done by the busiest and most renowned men elsewhere? How is it that among recognised authorities on cataract no Indian name finds a place? For answer one may turn to the most recent article* on the subject published in the *Indian Medical Gazette*, the object of the paper being to extend the scope and application of the operation of extraction within the capsule. It is something of a revelation to learn that the percentage of escape of vitreous in the operation may be reduced so low as 14%, or even lower at the expense of prolapse of iris. But one wants to know more about this. Was the percentage lower in the cases when a corneal incision, without iridectomy was resorted to? If the corneal incision is to be considered in any way an integral feature of the operation recommended, one must not lose sight of the grave disadvantages of this incision, viz., increased corneal astigmatism, adhesion of iris to wound, with consequent liability to secondary glaucoma and finally perhaps some increased risk of infection of the eye, and though escape of vitreous is as a rule doubtless followed by no evil consequences, yet there is always the chance of detachment of retina due to it and of infection entering the open wound, occupied by vitreous. Finally there is the liability to trouble with cortex when the capsule accidentally gives way.

One wants to know whether the one advantage of this operation, freedom from trouble with opaque capsule, at the time or later, is not too dearly bought as the cost of the above recognised defects. On this the whole question hangs, but it is just on this point that no information whatever is given. In "Results" there are grouped "First class eyes," "Second class eyes" and "Failures" with no indication of the standards of vision included under each heading. The fact is that it is an absolute impossibility for any one surgeon to perform over 1,500 extractions in eleven months thrown in, probably, with much other work of all kinds, and at the same time to be responsible for the classification of cases and accurate testing of results, supposing the patients could be kept in hospital long enough to give approximately the final results.

It is of course the fault of the system of overwork that though India must produce highly skilled operators, they cannot attempt to frame the rules that guide them.

THE SPECIAL CATARACT NUMBER

I would like to make some suggestions regarding information to be collected in connection with cataract extractions. In dealing with anti sepsis, not only the strength of the solution employed, but also the mode of application and the number of applications, or the amount used, should be given. Also whether the lotion is used only before the operation, or also during it, whether before the cocaine instillation or after it, also whether the amount used varies with the condition of the conjunctiva, also the treatment adopted for the cure of conjunctivitis before operation might be given, together with the condition of conjunctiva which is regarded as satisfactory, either before or after treatment. These points are all essential in the estimation of the efficacy of any solution employed.

* Extraction of cataract in the capsule, by Henry Smith, Captain, I.M.S. July 1900

† The percentage given for the ordinary operation leaving the capsule 84%, seems very high for practised hands and appears to require some explanation.

In results "suppurations" may indicate either panophthalmitis alone, or include also suppurative iridocyclitis and suppuration of cornea, complete or partial. Cases of "iritis" grade from the formation of a few posterior synechiae, probably more from abrasions of the back of the iris than from actual iritis, up to complete closure of pupil, with or without the preservation of fairly normal tension. Usually, I believe only the latter cases are included in returns, but there is no definite rule followed.

In dealing with statistics regarding trachoma the initial difficulty lies in separating trachoma from follicular conjunctivitis. The essential difference between the two lies in the expectation that the latter will subside eventually leaving a normal conjunctiva whereas in trachoma one expects secondary changes, the chief of which is scarring. Practically, in the earlier stages it may be impossible to separate the two affections.

Yours &c,
H HERBERT, F.R.C.S.,
MAJOR, I.M.S.,
Ophthalmic Surgeon, Bombay

January 1901

BERI BERI IN PERAK

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In the September number of the *Indian Medical Gazette*, there is a paper entitled "Notes on Beri Beri in Rangoon," by Capt. Barry, I.M.S., in which he states that in three years there were admitted into the "Rangoon General Hospital" 914 cases of this disease 769 of them being in Hindus.

As he states that these Hindus come over mainly as coolies from Southern India for the paddy harvest, I think it may be assumed that they belong to the same race that come over to this country for agricultural purposes, that is to say that they are Tamils.

Now in this country it is found that if Chinese and Tamils are put to live and work under similar conditions the as a rule, well fed Chinaman is very liable to Beri Beri and the less well fed Tamil to Dysentery, but that the latter never develop Beri Beri. This country is one of the finest Beri Beri countries in the world, and on more than one occasion this disease has headed the list of causes of death, but I have never yet seen Beri Beri in a Tamil, and, during the past year only, more than 1,000 Tamils have passed through my hands. If a case is reported to me as Beri Beri in a Tamil I always go very carefully into it, and have never yet seen a case which I could really call Beri Beri. In fact I have come to regard (and I believe others hold the same view) the Tamil is in some way immune to this disease.

The diet question is again mentioned in this paper. In this country the ordinary Chinese coolie lives very much better than the average Tamil coolie but the Chinese coolie gets Beri Beri, the Tamil, I think, never does. Of course I may be wrong in my assumption that the Hindus mentioned in this paper are Tamils, in which case I should be glad to know, but I simply send these observations to call attention to statements which make the experience at Rangoon so greatly at variance with that which prevails in the Malay Peninsula.

Yours, etc,
J TERTIUS CLARKE,
DISTRICT SURGEON,
Lower Perak

CORRECTIONS IN LETTER ON PLAGUE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Will you allow me to correct some typographical errors and omissions on page 412 of the October issue? In line 23 after "Karachi Epidemics" add "because the germ finds them at that season in their death traps there." The first few words of a new sentence appear to have been left out here, what follows should read—"When one ventured to point out that certain classes and individuals, communities and localities were comparatively immune from their environments generally leading them to enjoy fresh air habitually," &c, &c. "The qualifying adjunct comparatively failed to arouse a sensation in consciousness in the brain box of our critics." In line 74 the word "their" has been left out between "riding" and "minds".

I have only just read this number of the *Gazette*, hence the delay in rectifying those trifling mistakes which interfere with the sense and look ridiculous to the uninitiated reader.

Yours, etc,
GEO S THOMSON,
MAJOR I.M.S.,
14th Bombay Infantry

SAGOR, 5th January, 1901

SAGS IN JAIL DIET

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—In reply to your question on page 233 of the *Indian Medical Gazette* for June 1900, I beg to state that in my opinion "Lal Sag, Kulfa, Sag Sursun, Sag Kaun, Palak and Chulni" are useful antiscorbutics if the water in which the vegetable has been cooked be not thrown away, because the antiscorbutics pro-

portions of these vegetables are due to the salts they contain, the most important being soluble salts which pass into the water during the process of cooking. In vegetarian families among whom Sags form a chief part of their diet scurvy is unknown.

Yours, etc,
BHUGWAN DAS,
MEDICAL OFFICER,
Gyral Jail

PERMANGANATE IN WELL DISINFECTION

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I beg to intrude upon your valuable space with some suggestions of mine regarding disinfection of wells, cesspools and tanks with permanganate of potash. In many instances it has been noticed that in cholera and other epidemic seasons wells, &c, are ordered to be disinfected with the above salt, but the exact *modus operandi* has not been distinctly understood or followed by the persons to whom the order is given. Consequently the results on many occasions have been very unsatisfactory. Throwing the pure crystals on the surface of the water is not only useless but wasteful.

For wells.—Drawing water every time and then thoroughly dissolving the crystals, stirring with a stick (as hands become stained) and then throwing the solution into the well again and again is a tedious process and takes a good deal of time, and the work frequently is neglected when a good number of wells have to be disinfected in a short time.

The most convenient way is to put a handful of the salt in a bucket half full of water. This is lowered a foot below the surface of the water and drawn up with a sudden jerk. This process repeated quickly by up and down movement of the hand, will cause the water to rush in and out of the bucket, and thus agitating the whole surface will colour the water to the desired standard in a few seconds without wasting a grain of the salt, which is gradually dissolved during the agitation. If some crystals are still left after the desired colour is obtained, they may be used for the next well to be disinfected.

For tanks, &c.—The most convenient method is to tie a handful of the salt in a clean rag and let it be hung under a float (common *sala* or a bundle of jute stems or any light substance) on the surface of the water and started from the windward side. The wind will carry the float, with the bundle under it, to the other side and the salt will be dissolved in the water. Many such bundles may be used according to the length and breadth of the tank. If there is no wind at the time a garland of many floats may be dragged along the tank by two men after the manner of a fisherman's net.

These processes may be done very conveniently and efficiently in a short space of time.

JUNGIPUR,
20th January 1901

Yours, etc,
K P BANERJEE,
Asst. Surgn., Jungipur

HYDROCELE IN INDIA

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—I see in the *Indian Medical Gazette* for November, which has just reached me, a note on Hydrocele in India, and an invitation to readers to express their views on the causation of this complaint. Before I left India, I had commenced making a series of statistics of cases of hydrocele, with a view of finding what proportion of cases of hydrocele at an early stage have filaria in their blood. I have none of the numbers by me now, but a very large proportion of natives in the Madras Presidency undoubtedly suffer from small hydroceles for which no definite cause can be assigned. I think it very probable indeed that many of these cases are due to filaria. Out of eight cases of filariasis (fil. Nocturna) in one regiment in Madras, five also suffered from hydrocele. Most of the hydroceles were very small and gave the patients no trouble.

The fact of hydrocele and filariasis occurring so frequently as it does in Madras in the same individuals cannot, I think, be merely a coincidence, and in spite of the fact that I have not found filarial embryos in the clear fluid from any of these hydroceles, I think it very probable there is a causal relation between them just as the majority of the cases of so-called non venereal orchitis are almost certainly filarial in origin.

I do not know whether the filaria nocturna has previously been credited with the production of ordinary hydroceles, but if among a number of men one wishes to find out those with filaria in their blood I would advise that the blood of those suffering from hydrocele—and among one or two hundred men of the Madras Presidency one will certainly find several cases of hydrocele—be first examined. By doing so one is more likely to be successful in the search for filaria than by examining all the other cases.

Possibly the comparative rarity of hydrocele in the Punjab is due to the fact that filariasis is, I believe, almost unknown there.

CHINA,
No 61, N Field Hospital.

Yours, etc,
S P JAMES, M.B.,
CAPTAIN, I.M.S.

TYPHOID FEVER IN NATIVES OF MADRAS

To the Editor of the "INDIAN MEDICAL GAZETTE"

SIR,—In the comments on the Madras Sanitary Report, to be found on page 453 of the *Indian Medical Gazette* for November 1900, some scepticism is displayed towards two statements made by the Sanitary Commissioner for Madras. Both refer to the existence of enteric fever in this Presidency (Madras).

These marks of scepticism are my only excuse for publishing the following remarks on 13 cases of enteric in natives of India treated by me during the last three and a half months in the wards of the General Hospital, Madras.

During the above period, in which I have been acting for Capt. Harrison (sent on Military duty in connection with the Chinese troubles), I find that Major Robertson has treated ten cases, and that five cases have been admitted into the wards of the Second Physician. It is at the same time only fair to say that there seem to have been more cases of enteric in the General Hospital this year than usual, as in last year's figures I can only find six cases for the whole year.

I regret to say that the notes made on these cases have in several instances been lost, as I had no intention of publishing them, for it is quite a new idea to me that the existence of enteric fever in the south of India should be called in question. In no case could I have asked for the space requisite to publish the daily notes *in extenso*, and I therefore send you a résumé of my reasons for considering these 13 cases to have been enteric. I do not mean to say that every case presented all the characteristic signs and symptoms of enteric, but in no case would there have been any eventual doubt in my mind as to the diagnosis even without the confirmatory assurance of Vidal's reaction. For that matter, most medical men will admit that enteric amongst Europeans is by no means a disease which runs a typical and undeviating course, on the contrary, it is very much the reverse of this in its behaviour. Speaking broadly however, I may give my reasons for my diagnoses of typhoid fever in these cases as follows—

(1) Well marked headache in the early stages, often very troublesome to relieve.

(2) The very characteristic temperature record, of which I send you a sample for publication if you think fit. I particularly draw attention (a) to the tendency for the fever to keep at or about 104° in the second and third weeks, a tendency which we may (from one point of view) by our wet packs, cold spongings, etc., and (b) the inclination to an up and down character with marked remissions and intermissions just before the temperature line falls to normal.

(3) The tendency to diarrhoea, for though constipation is not infrequent, diarrhoea may be easily set up, and may then be troublesome, or it may exist from the first as a marked feature of the case.

(4) The characteristic pulse, facies and rash. It is a great mistake to suppose that the rash of enteric cannot be easily found on dark skins, indeed the spots are often surprisingly pink.

(5) The presence of gurgling in the right iliac fossa early in the disease and of abdominal distension later on.

(6) The enlargement of the spleen, not excessive (unless enteric has supervened on chronic malarial poisoning, as it did in two of my cases), and subsiding as the temperature falls.

(7) The characteristic tongue, accompanied with a tendency to the formation of sordes on the teeth and lips. In two cases (both very anæmic) the tongue was at no time characteristic.

(8) The proneness to respiratory complications early in the illness, and the tendency to albuminuria at a late stage of the disease.

(9) The curious characteristic smell exhaled from an enteric patient. My attention was first drawn to this sign by Major Robertson, I M S.

(10) The fact that in every one of these cases Vidal's test gave a positive reaction. Dr Chandra Sekar Aiyar was so very kind as to carry out Vidal's test for me, and while I gratefully acknowledge the valuable help he thus gave me, I feel it only fair to say that in every case but two, I had already made my diagnosis of enteric before I received his report.

Indeed in more than one case, I steadily maintained my diagnosis in spite of his reports being negative. Gradually the reaction became first feebly marked and then well marked in these instances.

(11) The fact that in two of the cases in which death occurred Capt. Fraser found typhoid ulcers in the intestine. In both of these cases death was due to an acute enteritis which picked out a number of the enteric cases in the hospital at the time. This extraordinary and most unfortunate complication of the treatment of enteric was synchronous with the prevalence of cholera in Madras.

I find that the longest duration of pyrexia in any of these was 45 days and the shortest 17 days. The former developed bed sores, and died of cardiac failure, a perfect exhibition of the typhoid condition.

I refrain from further comments on these cases, as the points of interest were so many that they would take me further afield than the space I can ask for, would permit, but I hope to be allowed to suggest a few lines on which your many readers could afford

valuable evidence on a wider field than I have yet touched on, I refer to the mode of origin of enteric in India amongst natives.

The two views on this subject most widely held are familiar to most of us: they are (1) The theory that the disease has been overlooked amongst natives for the simple reason that it has not been looked for. It is advanced in support of this that all natives probably suffer from enteric at one time or another, and that, as a consequence, a degree of immunisation has been established, which renders the fever atypical in its course, and likely therefore to be mistaken for malaria, or to be classed under the convenient but misleading heading of 'simple continued fever.'

(2) The theory that enteric has been introduced into India from England and is gradually obtaining a foothold, it is urged that the environment has not proved favourable, and that it has taken the disease some time to establish itself.

As to these theories—

(A) It seems not unlikely that in the near future many of us will be diagnosing Malta Fever in India, who have not done so before, and yet it is not probable that it has been with us for many years? Other analogies might be found. If, however, those who have been on the outlook for enteric fever for many years would give us their experience, it would throw light on this subject. I recently had the privilege of discussing this subject with a physician well known and widely respected in this country for the value of his professional opinion, who told me that he had been on the look out for enteric in India for over 30 years, and that he had watched the gradual increase of the number of cases, which came under his observation, and was convinced that the disease was on the increase amongst natives.

He directed attention to the habits of life of patients suffering from enteric, stating that it would probably be found that they were imitators of Europeans. I find that in at least three of my 13 cases the patients were purely native in habits and were strict vegetarians, but most of them were probably of a class to eat anything they got, and to ask no questions for conscience sake.

(B) The above question of the habits of our enteric patients may well claim a share of our attention, as bearing on the possible adaptation of the native for infection, rather than as indicating the direct source of infection, for in the latter particular the European would appear to be the more favourably situated of the two.

(C) If enteric be assumed to be a disease new to India and therefore implanted on a virgin soil, one would certainly have expected that it would have run riot amongst the natives, like measles, small pox, and syphilis have done elsewhere under similar circumstances. It would, however, be a mistake to allow such analogies to lead us to important conclusions, it is often the unexpected that happens. Scarlet fever has illustrated this point for us, so has diphtheria, probably we might add plague to the list.

(D) It may fairly be urged that the age of the sufferers would be different according to which theory is the correct one. In the case of theory No. 1 being correct, typhoid should be common amongst native children.

Is it? Major Robertson tells me that he has treated three cases of enteric amongst children in his wards (female wards of the General Hospital), during the last three and a half months. Wider statistics are wanted. This at least shows that enteric occurs amongst native children, though I have heard this denied. One must also remember, as bearing on this point, the reluctance of native mothers to put their children under the restraint of hospital life.

(E) The view that enteric in India is an obscurer disease than in Europe does not coincide with my experience, nor with that of a number of capable and trustworthy medical officers with whom I have been able to discuss the matter. The cases met with in natives seem to me to be as easily diagnosable as those in Europeans, the type of the disease is not one whit less characteristic. The experience of other medical men on this point would be of interest.

I have, in conclusion, to acknowledge my indebtedness to those members of the hospital staff, who have kindly given me access to the statistics of their wards for the purposes of this letter.

Yours, etc,
R. H. ELLIOT, M.D., B.S., F.R.C.S.,
Captain, I.M.S., Madras.

P. S.—Since writing the above, I have had two more admissions into my native wards for enteric. Both were diagnosable without difficulty, long before I was able to get my opinion confirmed by Vidal's test.

If there is any serious doubt in the minds of medical men in India, as to the existence of typhoid amongst natives, I would suggest that you should invite *in extenso* notes of cases treated. I feel sure that men in this Presidency could publish many such cases if they thought it worth while.

[This subject is one which has been very frequently discussed in these columns, see *I M G*, Nov. 1899, p. 403, Dec., p. 461, Sept., p. 843. In the volume for 1900, see p. 68, p. 172, p. 487, and January 1901, p. 42. We shall always welcome information on the extent of the prevalence of this fever in the Natives of India.—ED., *I M G*.

THE USE OF OPHTHALMIC MATERIAL IN INDIA.

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Major Herbert, I M S., in his letter appearing in this issue refers to my article in your July number (1900). As he considers it an example of (1) the enormous waste of ophthalmic material in India, (2) the unscientific manner in which we do ophthalmic surgery in India, and (3) the reason why Indian ophthalmic surgeons are not recognised by writers of the West, I shall be obliged if you will insert the following remarks.

With regard to the enormous waste of material in my hospital and the insufficient details given, Major Herbert is rather premature in assuming that I have not got the details of which he speaks. Such an article as mine did not profess to be a treatise on cataract, nor did it profess to give all the details in my possession. In articles in Journals we must keep within a reasonable space, and I think I am right in saying that it is a common practice to write on a few issues at a time. I hope to be able to give in your forthcoming special ophthalmic number sufficient of the details required by Major Herbert.

I quite agree with him that the undermanning of our hospitals in India involves an enormous waste of material ophthalmic and other, but I do not agree with him in what he leaves to be inferred that an enormous waste of material does not exist in the great hospitals of the West. Sir M. Foster in his recent article (*Nineteenth Century and After*, January 1901) on this very point says "the complaint that I am now venturing to make is that the teachings of the multitudes of 'experiments' made daily in our hospitals are not adequately laid hold of. If we are to master the secrets of diseases, we cannot too much strive to learn, we cannot make the analysis of each experiment too exact or too complete."

Major Herbert says, "How is it that in cataract extraction every step and every variation in the operation has been worked out in Europe and America without reference to practice and opinion in this country?" I here internally disagree with Major Herbert. Extraction in the capsule has been entirely worked out by Indian operators, I am only one of them. I know as a fact that some of the leading men in the West doubt their own capabilities as far as this operation is concerned, and they fear to follow where Indian operators have led, and hence the fact that one may search western treatises in vain for more than the most meagre descriptions of this operation. How can they describe what they have never done or seen done? For ordinary cataract cases extraction in the capsule may or may not be the better operation, that is a matter of opinion. In certain cases I believe it to be the only justifiable operation, for example in immature lenses with opaque capsules, and in such cases the operator who shuns it is, I think, an incompetent operator. He is doing far from the best that can be done for his patient. Of such cases I have had considerable personal experience, and I have in view a case of this class, who has just returned from one of the leading men in London. He scrubbed the offending body the opaque capsule, and left it behind. Lens matter was also left behind, this was followed by iritis, a very common result when lens matter is left. Vision is practically no better than it was before, how could it?

All the details of the ordinary cataract operation have not been described clearly by western writers. Let any beginner in cataract operations read the books of European surgeons, and I think when finished he will have a very hazy idea in any given case put before him, as to what to do and what not to do, both at the operation and after.

How can the majority of these surgeons dogmatise on cataract? For the most celebrated among them have at best what we in India would consider a very limited experience. Then let the beginner read the two unpretending little books by Colonel Geoffrey Hall, I M S., based on what to European surgeons would be an almost incredible experience, and I think most people will agree with me that he has a better practical guide than in all the books written on ophthalmic surgery. I doubt if the name of Geoffrey Hall figures in any Western treatise.

Indian surgeons have had a hard struggle to establish their views on the practical treatment of stone in the bladder. Look at Jacobson's *Operative Surgery*, and one will find that Keegan and Frey are merely mentioned in a footnote. The reason is evident. Indian surgeons with all their experience of ophthalmic surgery have not yet written much on the subject. It is, I think, the duty of Indian ophthalmic surgeons to systematically publish their work, and if we do so, I am confident that in a few years hence we shall hold as strong a position in cataract as we do in stone.

Major Herbert says it is an absolute impossibility for any one surgeon to perform over 1,500 extractions of cataract in eleven months, and at the same time to be responsible for the classification of cases, and accurate testing of results. I quite agree with Major Herbert. I depend for a good deal on my Assistant-Surgeon, a very competent man, and a man who has incomparably greater experience in cataract and its treatment than any ophthalmic surgeon in the British Isles. He is much better qualified to do such work (classification, &c.) than those who do it in British hospitals, viz. house surgeons and students. Major Herbert is surely mistaken if he thinks that British surgeons

see every detail of every case themselves, about which they may afterwards write. The London visiting surgeons visit their hospitals about twice weekly, as a rule leaving the cases to the care of the house surgeons for the remainder of the time, and these latter write up the details and statistics from which articles and books are written.

The phthalmic work in the Jullandar Civil Hospital, be it scientific or unscientific, is not unsuccessful as regards practical results. If it were, the numbers would soon dwindle down, as there is no lack of first-rate operators all over Northern India. The Punjab villager would think nothing of a journey, even as far as Bombay or Calcutta, if he thought he could get better results. The peasantry are far from ignorant, and they discuss surgical results around the village *hooka* and act accordingly.

JULLANDAR,
February 1901

Yours, etc,
HENRY SMITH, M D, CANT, I M S.,
Civil Surgeon

[The letters of Major Herbert and Captain Smith raise many points of interest. There can be little doubt that Indian ophthalmic surgeons have written too little about their work, and consequently it remains largely unknown. We believe that the operation of extraction of the cataract in its capsule was introduced or largely modified by Macnamara, a well known Indian surgeon. It was because we believed that this very great personal experience of Indian surgeons in cataract was unrecorded and unknown outside of India that we have thought that the production of a special ophthalmic number of the *Gazette* would be of special value. Not only the numerous medical officers who each year by their work on cataract are entering civil employ, but that also it might have the effect of calling attention of those in other countries to the surgical wealth of the Medical Departments of India. It remains for our readers then to make the special ophthalmic number as great a success as possible and thereby only increase the reputation of the surgeon in India in another sphere of surgery.—Ed., I M G.]

Service Notes

We are indebted, as usual, to Major D G Crawford, I M S., M B., for the following notes on the Services in 1900.

The chief feature of the last year of the 19th century has of course been war, the great war in South Africa, the operations in China, the lesser war in Ashanti, and in the train of the war such questions as the undermanning and the efficiency of the R A M C, and the stoppage of leave in the Indian Medical Service, have come prominently to the front. Mr. Bardett Court's accusations against the Military Medical Administration in South Africa led to the appointment of a Commission to investigate the charges he had brought. This Commission has finished its work, but has not yet presented its report. We hope and expect that when their report is presented to Parliament, it may prove a complete justification of the R A M C, from all serious charges, except that of insufficient numbers, which indeed is the chief cause of the discontent in the Corps, and is at the root of nearly all their grievances. For the second time within three years, all officers of the Indian Medical Service on furlough other than sick leave have been ordered to return to duty, at a few days' notice. Of course, at the same time, all furlough other than sick leave has been stopped, and in addition, to some extent, voluntary retirement. However, an article like this is not the place for the discussion at length of such matters as the above, and a mere mention must suffice.

During the year, the war in South Africa cost the lives of 13 members of the R A M C, 20 medical men in the auxiliary forces, one member of the Indian Medical Service, and two Assistant-Surgeons in the Indian Contingent. The total number of deaths in the R A M C was 18, of whom one each died in Scotland, Ireland, India, Burma (murdered) and Hongkong, the other 13 in South Africa. Of these 13 officers, four were killed in action, or died of wounds, during 1900, as well as one Civil Surgeon, and one Assistant-Surgeon. Adding two officers of the R A M C and one Civil Surgeon killed in action in 1899, no less than nine Medical Officers have actually been killed or died of wounds between October 1899 and the end of 1900. Six out of the nine fell in the siege of, and operations around, Ladysmith. Battle, however, has, as usual, been far less fatal than disease. Seven officers of the R A M C and one of the Indian Medical Service, one Assistant Surgeon, and 13 Civil Surgeons (besides one who died immediately after arrival at home) died of enteric fever in South Africa. Two members of the R A M C, three Civil Surgeons and one Assistant Surgeon, died of dysentery. Besides those killed in action, six officers of the R A M C and two Civil Surgeons died at Ladysmith, two officers of the R A M C, and three Civil Surgeons at Bloemfontein.

Voluntary retirement from the R A M C has practically been in abeyance owing to the war. Though 15 officers retired during 1900, all were on health or age grounds, and two of them died before the close of the year. The number of retirements from the Indian Medical Service during the first six months of the year was very large, nearly as many as the average retirements of a whole year, though voluntary retirement ceased during the second half of the year. When the strain caused by the wars in South Africa and China is removed, probably the number of retirements immediately following will be very large from both

services This will still further increase the undermanning difficulty, but on the other hand should give a lift to the juniors

THE SERVICES IN 1900

I—R A M C

A—Deaths

No	Rank.	Name.	Date	REMARKS
1	Surg Lt. Col	R. H. Forrester	18th June	(Royal Horse Guards) S S "Dunera near Durban, enteric fever
2	Lt. Col	A. W. Carleton	19th July	Groystones, Co Wick low
3	"	M. R. Ryan	23rd Aug	Hongkong
4	Surgn Major	A. C. A. Alex	23rd Jan	(Coldstream Guards) Ardrossan.
5	Major	W. Kiddle	9th Feb	Murdered, Mongkaw, Burma.
6	"	J. Minniece	17th March	Enteric, Ladysmith
7	"	C. P. Walker	5th Jan	Dysentery, Ladysmith.
8	"	T. A. P. Marsh	22nd May	Enteric, Deelfontein
9	"	{G. Hillard, C. M. G.}	7th Sept	Newcastle, S Africa, from wounds at Doorn kop
10	Captain	G. S. Walker	23rd Feb	Enteric, Ladysmith
11	"	H. B. Dowse	12th May	Enteric, Bloemfontein
12	"	R. Fawcett	7th May	(2nd Life Guards) Dysentery, Bloemfontein
13	"	W. P. Barter	2nd Dec	Enteric, Agm
14	"	R. H. E. Holt	21st Feb	Wounds, Tugela
15	Lieutenant	G. W. J. Jones	20th Feb	Enteric, Ladysmith
16	"	H. B. Onraet	27th Feb	Killed in action, Hlang waane
17	"	G. H. Irvine	31st March	Killed in action Sanna's Post
18	"	E. L. Munn	22nd May	Enteric, Boshof
19	Surg Lt.-Col	J. Creagh	6th July	8th Batt. (North Cork) K. R. R. C. Enteric, Kroonstad
20	"	W. W. Lake	13th July	Militia Medl. Staff Corps Bright's disease, Bloemfontein
21	Surgn-Major	J. T. Toll	20th June	South Australian Contingent Enteric, S S Australasian
22	Surgn Major	J. Waring	6th Oct	Militia Medl. Staff Corps Dysentery, Pine Town Bridge, S Africa.
23	Capt	Hall Owen	6th April	Victoria Medl. Staff Corps, Enteric, Chieveley
24	"	W. F. Hopkins	5th May	Victoria Medl. Staff Corps, Enteric, Renburg
25	"	H. W. Masterman, M. B.	28th Nov	Welsh Militia, Malarial fever, Prieska
26	Lieutenant	A. W. Hall	20th March	Natal Volunteer Medl Staff Corps Enteric, Mool river
27	Cons. Surgn.	Sir W. Stokes	18th Aug	Pneumonia, Pietermaritzburg
28	Chief Surgn	A. W. Hughes	3rd Nov	Welsh Hospital Enteric, London
29	Civil Surgn	W. C. Grigg	12th March	Enteric, Wynburg
30	"	R. Irvine	28th May	Enteric, Ladysmith
31	"	H. Bryant	7th June	Enteric, Bloemfontein.
32	"	E. Smith	16th May	Enteric, Ladysmith.
33	"	R. T. FitzHugh	15th June	Enteric, Deelfontein.
34	"	T. Jones	18th June	Chief Surgn, Welsh Hospital, Springfontein
35	"	H. Davies	16th June	Welsh Hospital Dysentery, Springfontein
36	"	—Eames	27th May	Welsh Hospital, Dysentery, Bloemfontein
37	"	H. A. Scott	24th Aug	Enteric, Pretoria.
38	"	J. Prestwick	28th Aug	Pneumonia, Howick, S Africa.
39	"	A. E. Elliot	1st Dec.	Enteric, Middleburg
40	"	O. C. Parsons	2nd Dec.	Enteric, Harrismith
41	"	—Engelbach	18th Dec.	Killed in action, Nooitgedacht.
42	"	B. N. Maclean	23rd June	Imperial Light Infantry, Volksrust.
43	Dr	D. Davis	21st May	77th Co (Manchester) Imperial Yeomanry, Capetown

B—Retirements

No	Rank.	Name.	Date	REMARKS
1	Colonel	W. E. Riordan	4th July	
2	"	N. B. Major	6th Nov	On T H P
3	"	C. A. Maunsell	24th Sept	
4	Lt. Col.	H. J. Michael	9th June	
5	"	S. J. Flood	18th July	(Died, September)
6	"	A. W. Browne	14th July	On T H P
7	"	G. F. Poynder	29th Aug	
8	"	F. R. Barker	16th Sept.	
9	"	R. W. Barnes	17th Nov	
10	"	J. J. Falvey	21st Nov	
11	Major	J. Semple	24th Feb	(Died, 4th October)
12	"	C. J. Addison	23rd Nov	
13	"	M. O. O. Drury	5th Dec	
14	"	F. M. Baker	8th Dec.	
15	"	H. W. Vaughan-Williams	3rd Aug	On T H P

C—Promotions

No	Old Rank.	Name	New Rank	Date	REMARKS
1	Lt.-Col	J. M. Namara	Colonel	4th July	V. Riordan, R
2	"	G. N. D. Leake	"	6th Nov	V. Major, R on T H P

D—Honours

No	Rank	Name	Honour	Date	REMARKS
1	Surgn Genl	W. Taylor, C. B.	Good Serv Pension	— Feb	
2	"	H. S. Muir	C. B.	23rd May	(Retired.)
3	Lt. Col.	B. B. Connolly	C. B.	23rd "	West Africa.
4	Major	R. Crofts	D. S. O.	9th Jan	For Colenso
5	"	W. Babbie	V. C.	20th Apl	15th Dec 1900
6	Captain	R. H. Penton	Medjidie (3rd Cl)	— July	Soudan.
7	Asst.-Surgn	D. P. Ross	Knight	23rd May	(Retired, Surgn-Genl, Trinidad)

E—Deaths of Retired Officers

No	Rank	Name	Date	REMARKS
1	I. G.	T. Guy	2nd Mar	Dover
2	"	T. W. Barrow	1st July	Woolwich
3	S. G.	N. Heffernan	3rd May	Cheltenham
4	"	J. G. Donaldson	7th July	Salisbury by the Sea
5	"	J. Lamproy	29th Oct	Southsea.
6	D. I. G.	T. F. Wall	9th March	Omagh.
7	"	J. B. St. C.		
8	"	G. T. Gallbraith	21st Aug	Surbiton
9	D. S. G.	D. Oullen	24th Oct	Stirling
10	"	J. Carroll	4th Jan.	Cheltenham
11	Brig.-Surgn	J. A. Scott	27th Nov	Dublin
12	"	W. L. Baker	4th Feb	Nahun, Sirmur
13	"	R. Hyde	19th Jan	Rathmines Dublin
14	"	T. Wright	30th Mar	Blackheath.
15	Lt. Col	E. O. Reynolds, v. C.	20th July	
16	"	A. E. Hayes, D. S. O.	7th Feb	Bideford
17	"	S. J. Flood	19th May	Farnborough
18	Surgn Major	A. Croker	— Sept	
19	Major	J. Semple	18th July	Seaford, Sussex.
20	Asst.-Surgn	— Temple	4th Oct	Rathgar, Dublin
21	"	W. Clegg	10th April	Beirut (Temple Bay).
22	"	G. F. White	16th April	Boston, bronchitis
			20 June	Wimbledon

II—Bengal

A—Deaths

No	Rank	Name	Date	REMARKS.
1	Major	J. H. Scillick	29th Nov	Liver abscess, Mandalay
2	Captain	J. S. Stevenson	21st July	Heat stroke, Lucknow

B—Retirements

No	Rank.	Name	Date	REMARKS.
1	Colonel	J. H. Newman	14th July	
2	"	J. O. G. Carmichael	2nd May	
3	Lt.-Col.	R. C. Sanders	18th July	
4	"	W. A. C. Roe	27th Feb	
5	"	A. Deane	1st April	
6	"	E. G. Russell	27th Aug	
7	"	R. N. Stoker	2nd April	
8	"	C. J. H. Warden	4th June	(Died 18th July)
9	"	D. W. D. Comins	16th July	
10	"	C. J. McCartie	25th June	
11	"	A. Duncan	1st Feb	
12	"	C. B. Hunter	15th April	
13	"	J. F. Tuohy	24th June	
14	"	T. R. Macdonald	30th June	
15	Captain	J. W. Wolfe	20th May	On T H P

C—Promotions

No.	Old Rank	Name	New Rank.	Date	REMARKS
1	Lt.-Col.	O. H. Joubert	Colonel	29th March	V. Newman, T. E.
2	"	J. T. B. Bookey	"	2nd May	V. Carmichael, R

D—Honours

No	Rank	Name.	Honour	Date.	REMARKS
1	D. S. G.	H. Cayley	Q. H. P.	11th July	(Retired) V. Grant, D
2	Colonel	J. H. Newman	Good Service Pens	1st April	
3	Lt.-Col.	A. M. Crofts	C. I. E.	23rd May	
4	"	R. N. Campbell	K. I. H. (1Cl)	23rd May	
5	Major	D. W. Scotland	K. I. H. (2Cl)	23rd May	
6	Capt	C. H. James	K. I. H. (1Cl)	23rd May	
7	"	J. W. Grant	K. I. H. (2Cl)	23rd May	
8	"	N. R. J. Rainier	Ans St John	1st Jan.	

E—Deaths of Retired Officers

No	Rank	Name	Date	REMARKS.
1	Surgn Genl.	D J O Calla	12th Aug	London.
2	B S	G V Currie	3rd Dec	London
3	B S	S M Shircore	12th Nov	Isleworth
4	B S Lt. Col	W Conter	17th May	Lalling
5	Lt Col	C J H Warden	18th July	Highbury, suddenly
6	Surgn Major	A Grant	3rd Jan	London
7	Asst. Surgn	T FitzPatrick	— June	London
8	"	J N Waugh	— Oct	Brisbane

III—MADRAS.*A—Deaths*

No	Rank	Name	Date	REMARKS.
1	Lt. Col	A Adams	20th May	Cholera, Mount Abu
2	"	G F Bovan	12th May	Pneumonia, Bangalore

B—Retirements

No	Rank.	Name	Date	REMARKS
1	Surgn Genl	C Sutherland	12th Aug	
2	"	C F McVittie	1st April	
3	Lt.-Col	H D Cook	20th Aug	
4	"	J W Evans	9th May	
5	"	F R DaCosta	4th Aug	
6	Lieut	F L F Payne	3rd Nov	(On T H P, since 3rd Nov 1898)

C—Promotions

No	Old Rank	Name	New Rank	Date	REMARKS
1	Lt.-Col.	C Little	Colonel	1 th Feb	To complete establishment.

D—Honour

No	Rank	Name	Honour	Date	REMARKS
1	Surgn Genl	C L. McVittie	Good ser vice pens		

E—Deaths of Retired Officers

No	Rank	Name	Date	REMARKS
1	S. G	G Mackay	20th Nov	Edinburgh
2	D I G	J B Fleming	7th May	Edinburgh
3	D S G	IL. Adam	13th March	London.
4	B S	J Kees	29th Dec	Stuttgart
5	Surgn Major	J Donaldson	1th April	London
6	"	O R G Parker	1st July	Torquay

IV—Bombay*A—Deaths*

No	Rank	Name	Date.	REMARKS
1	Capt	A J Heath	16th Feb	Exminster

B—Retirements

No	Rank.	Name	Date	REMARKS
1	Lt. Col.	L O Barker	3rd Jan	
2	"	A S G Jayakar	23rd April	

C—Promotions

No	Old Rank.	Name	New Rank	Date	REMARKS
1	Colonel	G W R Hay	S G	1st Apl	v McVittie, R
2	Lt. Col	T S Wolf	Colonel	26th May	v Hay, P
3	"	J S Wilkins	"	2nd Oct.	v Banks T E

D—Honours

No	Rank	Name	Honour	Date	REMARKS
1	Lt.-Col.	J S Wilkins	Ass St John	1st Jan	
2	"	K S Nariman	KIH (2 cl.)	23rd May	
3	Major	H W Stevenson	KIH (2 cl.)	23rd May	
4	Capt.	P P Kilkelly	{ Brilliant Star of Zanzibar	—	

E—Deaths of Retired Officers

No	Rank	Name	Date	REMARKS
1	S G	G G W Orpon	30th June	Bath
2	Surgn Major	R Collum	12th Jan	Surliton
3	"	W J Stuart	4th Aug	London

V—I M S*Deaths*

No	Rank.	Name	Date	REMARKS.
1	Lieut	C H B Adams	2nd June	Enteric, Bloemfontein
2	"	W Mc G Orpon	20th May	Quetta. (Madras) Dysentery,
3	Asst-Surgn	L E Jackson	21st April	{ Pretoria } W o u n d s ,
4	"	J T O'Neill	26th Aug	{ Geluka, S Africa.

THE new leave rules whereby privilege leave can be added to furlough or other leave will be a boon to medical officers in Civil employ. Furlough or leave of any sort is such a parlous thing nowadays for the Medical Department that there will be few of us who have not three months privilege leave due when furlough comes. It will be something to be able to draw full pay for the first three months. At the same time it should be remembered that the loss of a lien on a good appointment means more to a Civil Surgeon than to the Civilian. The latter's pay is good where ever he goes, that of a Civil Surgeon depends upon the number of appointments in each individual station, and upon his own popularity as a Surgeon and Physician, and a reputation is only built up after some years residence in the same station.

WE abstract the following notes, on the life and career of a famous member of the Medical Service of the East India Company, from an interesting note on the Black Hole of Calcutta in the *Pioneer* (20th January)

JOHN ZEPHANIAH HOLWELL, the son of a London merchant, was born in Dublin, September 17th, 1711. He was educated for the medical profession and came to Calcutta as a "Surgeon's mate." He early settled in Calcutta, and acted at Patna as a Surgeon Major of the Company's Forces. He was confirmed in the Service in 1712. He practised for eleven years in Calcutta, taking also a great interest in Municipal affairs. He went home on sick leave in 1719, and during the voyage drew up a scheme for reforming the Zemindary of Bengal. This scheme was approved of by the Directors, and Holwell returned to Calcutta with a seat on the Council as perpetual Zemindar of Calcutta. He completely altered the methods of collecting the Company's revenues. His energy won the approval of the Directors, and his pay was raised from 2,000 to 6,000. When Governor Drake fled to the ships abandoning his post it was Holwell who took the lead, and with the remnant of the English in Calcutta went through the tortures of the Black Hole. He was, after surviving that awful night in June, brought as a prisoner to Murshidabad and afterwards was released and joined the ships in the Hooghly. He went home in ill health, and on the voyage wrote his famous narrative of the Black Hole—an experience which a Bengali writer recently pretended was a fragment of Holwell's brain. Holwell returned to India, but a change of Directors in London placed enemies on the Board, and he was falsely charged with taking bribes. Lord Clive, however, believed in him, and he acted as Governor of Bengal after the departure of Clive from India. Lord Clive and Warren Hastings he was fiercely attacked by the Directors whose work he had done so long, and in his old age fell upon evil days. He died near Harrow in his 88th year on 5th November 1798.

MAJOR A. SILCOCK, I M S., recently Civil Surgeon of Saugor C P., has been granted one year's furlough on medical certificate.

CAPTAIN W D SUTHERLAND, I M S., who was Civil Surgeon of Saugor last year, remains at home on four months extended leave (m c). He has been able to effect exchanges between several of the leading German medical papers and this Gazette.

MAJOR H E BANATWALA, I M S., having returned from leave goes to Nimar District as Civil Surgeon.

CAPTAIN A. G. HENDLEY, I M S., has gone to Hoshangabad as Civil Surgeon, displacing Capt C H Watson, who goes to Chanda.

LIEUTENANT COLONEL F S PECK, I M S., the Professor of Midwifery, Medical College, Calcutta, has always been a keen volunteer and we see that the entrenching spade recently patented by him is to be tried on a large scale in India by the troops.

PARA 172, Indian Army Regulations, Vol VI, is reconstructed as follows—

172 The following records will invariably be in the hand writing of a medical officer—

Admission and discharge book.—Columns 9, 10, 11 and 18

Medical case book.—All entries

Vaccination register (men)—All columns except 1 to 6 inclusive

Vaccination register (women and children)—All columns except 1 to 4 inclusive.

Small pox register.—All columns except 1 to 3 inclusive

Recruit register.—Columns 6, 7, 10, 11 and 12

Diary.—All entries

Confidential reports.—All entries

Requisition for supplies.—Quantities required

Diets and extras in diet sheets.—All entries

Weekly return of sick.—Remarks in one copy only

Cholera report and register.—The report and columns 9, 10, 11 and 12 of the register

Detailed medical history of an invalid.—All entries in one copy only except headings. The remarks under headings No 8 should, however, be in a medical officer's handwriting

Statement of the case of an insane officer or soldier—All entries in one copy only, except headings

Casualty report—All entries in one copy only, except headings

Medical history sheet—Page 1, chest measurement, physical development, small pox marks, vaccination marks, when vaccinated, marks indicating congenital peculiarities or previous disease examined for re-engagement, result of re vaccination, result column in table headed "appeared before a medical board," general remarks as to habits, conduct, etc "

PARA. 1469, Indian Army Regulations, vol 1, part I, is also reconstructed as follows—

1469 With a view to maintain the efficiency of the Service, medical officers will be placed on the retired list when they attain the following ages—

Surgeon General	60
Colonel	
Other officers	55

In any special case, where it would appear to be for the good of the service that the officer should be continued in employment, he may be so continued, subject, in each case, to the sanction of the Secretary of State for India in Council

MAJOR B B GRAYFOOT, I M S, acted as Civil Surgeon of Dharwar during the recent privilege leave of Lieutenant-Colonel D C Davidson, I M S, and Dr C Christy (author of "Mosquitoes and Malaria"), acted for Major Grayfoot, I M S, at Satara

THE services of Captain E V Hugo, I M S, M D (Lond) are again placed temporarily at the disposal of the Punjab Government.

THE services of Captain E. R Parry, I M S, M D, are replaced at the disposal of the Military Department

MAJOR W H GRAY, I M S, who has been for some time Superintendent, Central Prison, Bonares, has been placed permanently in the Jail Department, North West Provinces and Oudh

MAJOR E R. DAcOSTA, I M S, has been permitted to retire, with effect from 4th August 1900

FIVE hundred and ninety six officers, present and retired, of the Indian Medical Service are members of the British Medical Association

LIEUTENANT COLONEL F R. SWAINF, I M S, M B, who has been temporarily on military duty, owing to the China War, has returned to Bengal and has gone back to Motihari Lieutenant-Colonel T Grainger, I M S, has gone to Durbunga, and Captain J T Calvert, I M S, to Chittagong, vice Major D M Moir, I M S

CIVIL SURGEONS are now returning from temporary military duty, e.g., Major L J Pirani, F R C S, I M S, who has been Registrar of No 4, General Field Hospital at Calcutta, reverts to the North West Provinces, Captains W C Vickers and C B Harrison, I M S, to Madras, and Captains S E J Morgan, I M S, and J M Crawford, I M S, to the North West Provinces and Oudh

LIEUTENANT COLONEL R H. WHITWELL, I M S, now on sick leave, is appointed Civil Surgeon of Ranchi, vice Major F P Maynard, F R C S, I M S, who is confirmed as Civil Surgeon of Patna.

MAJOR D M MOIR, M D, I M S, becomes confirmed as Civil Surgeon of Chittagong, and Lieutenant-Colonel Cobb as Civil Surgeon of Backergunge

MAJOR J F MACLAREN, I M S, has become Civil Surgeon of Mussouri

It is notified for information that officers of the Royal Army Medical Corps will wear, on the stand and fall collar of their khaki frocks, a gorget patch two and a half inches long and one and a quarter inches wide, pointed at the outer end, and sewn on to each side of the collar in front, this gorget patch will be of blue cloth with loops of black Russia tracing, a gorget corps button near the point.

No authority exists for officers of the Royal Army Medical Corps to wear black collar tabs in Khaki uniform, and those doing so should adopt gorget patches of the above description

LIEUTENANT COLONEL CROFTS, I M S, remains in medical charge of the Hospital ship *Carthage*, which has gone back to China to bring back invalids

IN accordance with the New Military Lunatics Bill a soldier declared insane will be discharged from the army

MAJOR J J PRATT, I M S, on giving over charge of H H the Lieutenant Governor's Camp, returns to Nainital as Civil Surgeon

CAPTAIN C H BENSLEY, I M S, has been appointed Superintendent of the Central Jail at Mung Rasul, Punjab, vice Captain E R Parry, I M S

CAPTAIN J J M WOOLEY, I M S, M B, who has been with the No 2, General Hospital, China, has been granted three months' sick leave

DEPUTY SURGEON GENERAL J KEES, M D, I M S, died in Germany on 29th December, 1900. He entered the service in 1856. He was for several years Civil Surgeon of Kurnool, and afterwards Professor of Anatomy in the Madras Medical College, and afterwards Principal. He retired in 1887, and died in 1900, aged 72 years

MAJOR WYVILLE THOMSON, I M S, on return from China, rejoined his regiment, the 2nd Gurkhas

CAPTAIN A W T BUIST, I M S, is posted to Gurdaspur, Punjab, as Plague Medical Officer

WE regret to notice in the Home papers an inquest on the body of Captain B H F Leumann, I M S. He appears to have died under circumstances that are not clear in a London Hotel. Captain Leumann belonged to the Bombay Service, and had done a lot of brilliant work on plague, when it first broke out in India. He was then sent to Natal, before the war broke out, as a plague expert, and was recently invalided home. He was an M B (London), and D P H (Cantab). He wrote a little volume on micro-organisms and was a frequent contributor to our columns

It is a melancholy fact that the two officers of the I M S, sent to the Colonies as Plague Experts have both died suddenly. Last July Captain Stevenson, I M S, died of heatstroke in Lucknow, shortly after his return from plague duty in Mauritius, and now Captain Leumann

THE following six officers of the Indian Medical Service were Honorary Surgeons to the Queen, and now owing to the demise of the Queen, become Surgeons to the King—

Surgeon General	SIR W G HUNTER, K.C.M.G. (retired)
Ditto	J M CUNNINGHAM, C.S.I.
Ditto	G BIDIE, C.I.E.
Ditto	J CLEGHORN, C.S.I.
Ditto	C COLVIN SMITH, C.B.
Deputy Surgeon General	H CAILEY

The following were Honorary Physicians to Her late Majesty—

SIR JOSEPH FAYRE, BART, K.C.S.I.
Deputy Surgeon General T E CHARLES
Surgeon Major General J PINKERTON
Surgeon General W R RICE, C.S.I.
Surgeon Major General C E McVITTIE
Surgeon Colonel B FRANKLIN, C.I.E., I M S

Of the above Colonel B Franklin is the only one on the active list.

ONE of the last V.C.'s bestowed by Her late Majesty has been upon Lieutenant E T Inkson, R.A.M.C., for conspicuous bravery, on 20th February 1900, in carrying Lieutenant Devenish, who had been severely wounded to a place of safety. This is the second V.C. won by the R.A.M.C. in the South African War

THE following change has been ordered in the mode of distribution of the good service pensions granted to the Indian Service—

With reference to G.G.O. No 255, dated the 13th March, 1866, it is notified that, with the sanction of Her Majesty's Government, the separate *Presidential* lists of officers who have been granted good service pensions are abolished, and that the names of officers upon whom these rewards have been conferred will henceforth be borne on one list.

The selection of Medical Officers for good service pensions will also be made in future from an amalgamated list of the officers of the Bengal, Madras and Bombay Medical Services. These officers will, as hitherto, be allotted good service pensions only in succession to vacancies occasioned by the death or retirement with special extra pensions, of Medical Officers upon whom these rewards have already been conferred

MR E J BUTLER, M B, has been appointed by the Secretary of State for India, on the recommendation of the Director of the Royal Gardens, Kew, to the post of officia' Botanist to the Indian Government, at a salary commencing at £600 per annum. Mr Butler, who was educated at the Cork Queen's College, has been under Professor Hartog's especial tuition. Mr Butler is an authority on cryptogamic plants.

THE following changes have recently taken place in the Lahore Medical College—Captain D W Sutherland, M B, I M S, acts as Professor of Medicine, *vice* Lieutenant Colonel S H Browne, I M S, on sick leave, and Captain H G Melville, M B, I M S, officiates as Professor of Materia Medica, *vice* Captain Sutherland.

LIEUTENANT COLONEL LEWTAS, M D, I M S, is gazetted as Professor of Ophthalmology, Calcutta, from 7th December 1900.

THE following medical officers return to Civil employ from temporary military duty—Captain J M Crawford, I M S, M B, to North Western Provinces and Oudh, and Captain C J Robertson Milne, M B, I M S, to Bengal.

LIEUTENANT COLONEL G F A HARRIS, I M S, is gazetted as confirmed as Professor of Materia Medica in the Calcutta College, *vice* Lieutenant Colonel L G Russell, retired.

CAPTAIN F O N MELI, M B, I M S, has gone to the Central Provinces in Civil employment.

LIEUTENANT COLONEL J MAITLAND, I M S, our Associate Editor, has returned to Madras, we are glad to say in good health, and has resumed his appointment as Professor of Surgery, Madras Medical College.

LIEUTENANT COLONEL G M WALKER, M D, I M S, is appointed to act as Professor of Pharmacy and Materia Medica, Madras Medical College, and Captain G G Giffard, I M S, as Professor of Hygiene.

CAPTAIN G W JENNEY, I M S, has been appointed Residency Surgeon, Baroda, in addition to his other duties.

CAPTAIN C M C SMITH, I M S, took over charge of the duties of Civil Surgeon, Dharmasala, in addition to his military duties.

LIEUTENANT COLONEL PETER MULANT, R A M C, is appointed to the charge of the Station Hospital, Dalhousie.

CAPTAIN C M MOORE, M B, I M S, on return from China, becomes Agency Surgeon, Bundelkhand.

LIEUTENANT COLONEL R D MURRAY, M B, I M S, Professor of Surgery, Medical College, Calcutta, goes home on leave shortly.

LIEUTENANT COLONEL J MARSDEN, I M S, is appointed District Medical Officer, Nellore, *vice* Major F C Pereira, I M S.

On the 9th January last, Captain Dudley Cator Johnston, I M S, Medical Officer, 24th Biluchis, and Civil Surgeon, Loralai, was murdered in the bazar by a *ghazi* fanatic.

THE Government of India has sanctioned the temporary employment of twenty medical men.

THE *Journal of Tropical Medicine* has an article on the "broken hearted service" the R A M C. There is no doubt that in spite of the unremitting and splendid work of the Corps in South Africa, an impression has got abroad against the Service. They were expected to make bricks without straw, and with the usual results.

CAPTAIN W W CLEMESHA, I M S, on temporary military duty, has been transferred to the medical charge of the 6th Bengal Cavalry at Nowgong.

LIEUTENANT COLONEL E S BRANDER, I M S, succeeds Lieutenant-Colonel G M Giles, I M S, retired, as Civil Surgeon of Shah jahanpur.

LIEUTENANT COLONEL C B MAITLAND, I M S (Bombay), has been appointed Principal Medical Officer of the expedition to Somaliland.

DEPUTY Surgeon General C E Raddock, I M S, retired, died in London on 5th January 1901. He retired, in 1887, after 30 years' service, having served in the Relief of Lucknow, the Bhutan Campaign and the Afghan War of 1879.

THE death is announced of Surgeon Lieutenant-Colonel S B Haliday, I M S (retired), in his 58th year.

MAJOR D M MOIR, I M S, acts as Professor of Anatomy, &c, Medical College, Calcutta, *vice* Major R H Charles, on sick leave.

SURGEON GENERAL R HARVEY, C B, F R C P, goes on leave shortly, and Surgeon General Spencer acts as D G, I M S.

COLONEL T H HENDIEY, I M S, C I E, goes shortly on leave, and it is probable that Colonel G Hall, F R C S, I M S, will act as I G, Civil Hospitals, Bengal.

LIEUTENANT COLONEL E MAIR, I M S, Inspector General, Jails, Bengal, will probably go on six months' leave in July next. Mr W Leonard will probably act for him, and Major W J Buchanan, I M S, go to Ahpore, Calcutta, as D I G, Jails.

LIEUTENANT COLONEL I NEITS, M B, I M S, goes on furlough (*m c*), and Major Sinha acts as P M O, No 4, General Hospital (China), at Calcutta.

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta.

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Annual Subscriptions to the *Indian Medical Gazette* Rs 12 including postage.

BOOKS, REPORTS, &c, RECEIVED

Journal of Hygiene, Vol 1 No 1 (Camb Univ Press.)
Hygiene and Public Health, Parkes and Kennwood (H K Lewis)
The Blood and Blood Pressure, G Oliver (H K Lewis)
Diseases of Thyroid Gland, Murray (H K Lewis.)
The Punjab Administration Report
The Thuggee and Dakaniti Report
Syphilis of Children, Carpenter, Ballière Tindall and Cox.
Bombay Med and Phys Soc. Transactions
Mosquitoes and Malaria. 2nd Edition (Christy &)
Medical-Legal Journal of New York
Man, Journal of Anthropological Institute of Great Britain
Malaria Reports of Royal Society. 3rd Series
Revista de Medicina Tropical (Ed by Dr J Gutierrez at Habana, Cuba)

COMMUNICATIONS RECEIVED FROM —

Capt O Kincaly, I M S Calcutta. Major D G Crawford, I M S Hooghly, Capt S P James, I M S China. Dr Max Simon Penzance, Dr Nuttall Cambridge, Maj H E Drake Brockman, I M S Rajputana, Major H Herbert, I M S Bombay, Capt H Smith, I M S Jullundur, Lt Col T Pope, I M S Madras, Capt W Vlokors, Coimbatore. Capt G Lamb, I M S, Bombay. Dr J Gutierrez, Cuba. Lieut. Col Porry, I M S, Lahore. Major F P Maynard, I M S, Patna. Major O Gorman, I M S, Lyallpur. Capt Ramsay, I M S, Baghdad. Major R H Charles, I M S Calcutta. Capt C Duor, I M S, Rangoon. Dr M B Sircar, Calcutta, Editor, *Indian Daily Telegraph* Lucknow. Editor, *British Medical Journal*, London, Dr D F Keegan Welsbaden. Mr P J Freyer, London, Major R Ross, Liverpool, Lieut.-Col Bamber, Lahore.

Original Articles.

ON A SPOROZOON FOUND IN THE
HUMAN BLOODBY J W CORNWALL, M A, M D (*Contab*), F L S,

CAPTAIN, I M S,

Health Officer, Madras

IN examining a number of dried films of blood, purporting to have been taken from malarial patients, I have recently come across three specimens which showed the presence of certain organisms in the blood, which I believe have not been described before, at any rate there is no mention of them in the literature I have access to

Case No 1 was a boy of 13, named Kuppusamy, who was admitted into the Native Infirmary under the care of Lieutenant-Colonel Reeves, I M S, who has been kind enough to allow me to have films prepared from his patients and to visit any I wished. He was anæmic, had had fever for about three weeks, and his spleen was slightly enlarged and tender. He had not been out of Madras for four years, and there was no fever in the house from which he came or, as far as could be ascertained, in the immediate neighbourhood, but his reputed father exercised no control over his movements, and the boy having joined an association of thieves and idlers known as *Somrais*, was in the habit of wandering away from home for ten days at a time, sleeping anywhere and eating what he could get. He quickly tired of hospital life and ran away after four or five days and could not again be found.

A specimen of his blood showed a few large intracorpuscular, pigmented malarial parasites, apparently about to turn into crescents (Figs 1, 2, 3), two large, well-formed crescents with pigment granules collected in H form in the centres (Fig 4), and in one field 12 small falciform bodies about one-fourth to one-fifth the size of the crescents.

Other groups were seen in different parts of the preparation.

Case 2 was a boy about ten years old, named Manikkam, also under the care of Lieutenant-Colonel Reeves in the Native Infirmary. He had been suffering from fever for six months in his village not far from Madras, and was brought in for treatment. His mother asserted that, with the exception of her son's case, there had been no fever in the village, but such statements have to be accepted with reservations. He had irregular fever for a few days after admission, was

extremely anæmic and even a little puffy about the face, spleen easily felt but by no means very large, liver slightly enlarged and tender, dyspepsia, anorexia.

A dried and lightly stained specimen of his blood, which was mounted and examined in water, discovered no malarial parasites in any stage, but a group of falciform bodies similar to those seen in Case 1. On watching the group the outermost body was seen to quiver, and in a few minutes, its movements increasing all the time in vigour, it succeeded in freeing itself from the rest of the group and sailed away, with irregular movements, but end on, across several fields. No flagellum was visible, but two or three times the organism appeared to get a *point d'appui* on the glass and shot itself across half the diameter of a field. Finally by an accidental movement of the slide it was lost and could not be found again.

There was no question of the movements being set up by evaporation or currents in the medium. This spore had clearly inherent powers of motility, which was all the more remarkable when it is considered that the film had been dried for some hours and that it had been hastily, though ineffectually, stained with eosin and hæmatoxylin before being mounted in water. The organism must have possessed great vitality.

Another specimen obtained on the same day and properly stained showed many groups of these falciform spores but no malarial parasites (Figs 7, 8, 9). Other figures showed the apparent presence of four of these spores within the substance of a red blood corpuscle. In this position they presented a slightly different appearance to those found lying free in the plasma, in that they each had a well-marked double contour, and it could be easily made out that within the inner contour all the cell contents were lightly stained blue with the hæmatoxylin with the exception of the central nucleus, which took the colour more deeply.

The subsequent examinations of Manikkam's blood revealed neither falciform spores nor malarial parasites, only an increased number of lymphocytes and the distorted corpuscles or poikilocytes usually seen in severe anæmia. He was treated with quinine and his temperature fell to normal about a week after admission.

Case No 3 was a woman, named Thulasi, who was admitted to the same hospital for rheumatic pains in her joints. Her temperature was normal until the ninth day after admission, when it rose to 104° F. A specimen of her blood taken on that day showed no malarial parasites, but a large group of falciform spores similar in all respects to those found in Kuppusamy and Manikkam.

Subsequent examinations of her blood failed to disclose the continued presence of these organisms.

The affinities and pathological significance of the falciform spores cannot be determined without further investigations. My main object in publishing the results of a few crude observations is to ascertain if more information on this subject is available and to invite criticism. The first occasion on which I saw them I not unnaturally mistook them for malarial crescents and showed them as such to two other medical men, who did not dissent from that view. Reflection, however, quickly suggested that it is unusual, to say the least of it, to see 12 malarial crescents in the same field under an oil immersion lens. They were, moreover, much smaller than ordinary crescents and highly refractile, so much so that they were almost invisible in an unstained specimen when the condenser was used. They contained no granules of pigment and above all were evidently motile. I therefore decided that they were not of malarial origin, but were probably allied to *Dr. prandium* or *Lankosterella rannum* which can be found in the blood of Madras frogs with a certain degree of frequency, and that their presence in Kappasami's blood concurrently with the ordinary malarial forms was a coincidence.

The specimen of Manikkam's blood obtained a few weeks later confirmed the view that this organism had no connection with malaria morphologically, and also gave rise to a suspicion of the possibility of similar symptoms being traceable to the influence of both organisms, since Manikkam had all the outward and visible signs of severe malaria, while the most careful search through many extensive films taken at different periods was devoid of results as far as the malarial organism was concerned. Nevertheless he had been taking quinine for two or three days, and it is quite possible that, though his peripheral blood was free from malarial parasites at the time of examination, it might have contained plenty a short while before.

In this patient, too, in addition to the intra-corpuscular occurrence of the falciform spore previously described, one group was observed, which (Fig 13) had apparently been developed within an enlarged blood corpuscle by the segmentation of some unknown form. Other parts of the specimen showed groups lying free in the plasma and sometimes lying partly or even entirely on the top of red blood cells, as evidenced by focusing up and down. In these groups, which sometimes looked as if a spherical body might have been crushed and its component parts spread abroad, no trace of a ruptured limiting membrane could be made out, nor was any pigment or "nucleus de reliquat" visible.

The appearances presented by the film obtained from Thulasi did not throw any flesh light on the nature of these spores, which undoubtedly belong to some species of the

sporozoa. From their motility and collocation it is probable that they are microsporozoites, and that the macrosporozoites and fully developed forms have yet to be observed.

Whether they are hæmic parasites only, or whether they exist in other parts of the body in their other stages can only be at present surmised from a comparison of their characteristics with those of other better known sporozoa. The sporozoa as classified by Labbé are an immense order, all the species of which are parasitic in other animals, and it is hardly surprising to find that human beings are also occasionally infested with some of them. Besides the "*Plasmodium Malariae*" Labbé mentions only a few coccidia and pseudo-coccidia and two species of sarcocysts which have hitherto been found in man. The complete life history of but few of these sporozoa has been worked out, as a rule, only one phase of their existence has been noted in some animal, and when we recall the complexity of the life history of the malarial sporozoon, we should prepare for any development in connection with other members of the same division.

A sporozoon of the genus sarcocystis is extremely common in Madras, and can be found in the muscles of quite 50 per cent of the cows and buffaloes sold in the markets as beef. It is seen lying longitudinally between the muscle fibres, outside the sarcolemma, and is a delicate, whitish, fusiform body varying according to its age from 2 mm to 1 cm in length. When broken up under the microscope numberless falciform spores are seen which are not, however, of the same size or shape as the ones found in the human blood in the above-mentioned cases. How they get into the cows is not known, though it is presumably through the food in the same way as trichinae. Apparently they cause no symptoms when not too numerous in the muscles of the cow, and do no harm when eaten by man, as they must be killed in the cooking.

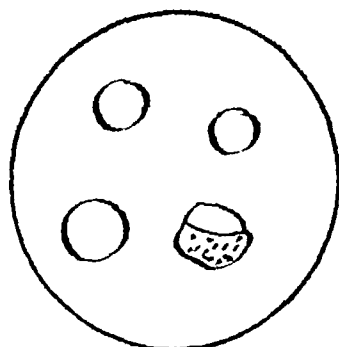
Though I do not imagine that there is any connection between this sarcocystis and the hæmic organism above described, yet all the members of a division of organisms some of which, such as the different species which cause malaria, and the coccidia, which, as described by Dr. Joseph Griffiths in Allbutt's *System of Medicine* (Vol II, p 1003), may give rise to the little known though fatal condition termed prosopterismosis, and which even perhaps includes the causative agent of carcinoma, are well worthy of study, for every item of knowledge gained about the life history of one member tends to assist in throwing light on the development of others.

In conclusion I must thank Assistant-Surgeon Wynne for his kindness in preparing and sending me the films.

ON A SPOROZOON FOUND IN THE HUMAN BLOOD

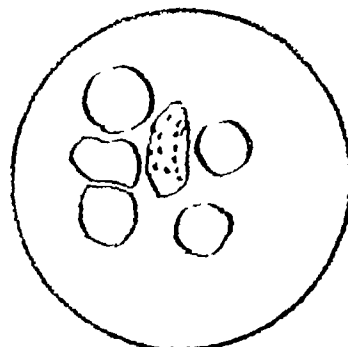
BY CAPTAIN J W CORNWALL, M A, M D (*Cantab*), F L S, I M S

Fig 1



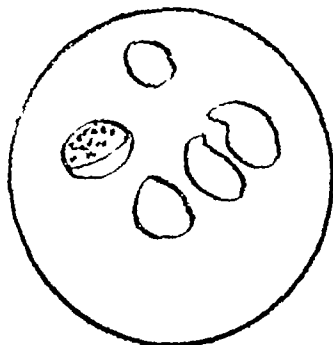
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Fig 2.



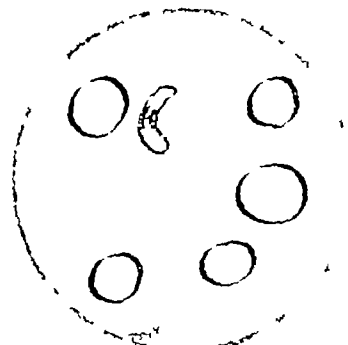
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Fig 3



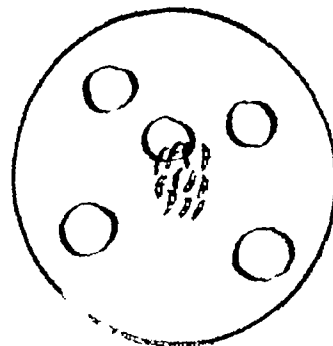
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Fig 4



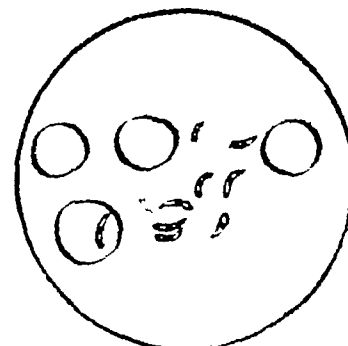
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Fig 7



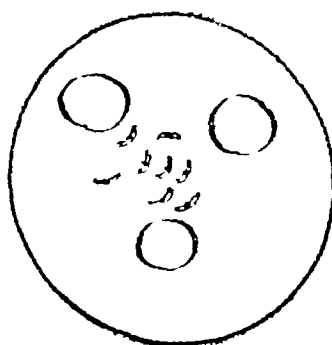
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Fig 8



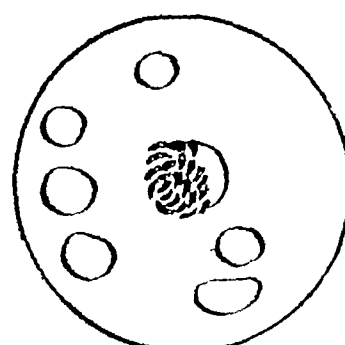
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Fig 9



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Fig 13



× 800

TYPHOID FEVER IN THE NATIVES OF INDIA, ITS DIAGNOSIS BY MEANS OF THE SERUM SEDIMENTATION RE ACTION

By GEORGE LAMB, M B (GLAS),

CAPTAIN, I M S

(From Research Laboratory, Bombay)

No apology appears to me to be required for again opening the question of the prevalence of typhoid fever among natives of India. For while many practitioners in this country still hold the view that typhoid fever is exceedingly rare or almost unknown among natives, there are other medical officers (those being mostly of the younger generation), who maintain that many true cases of this disease pass under such names as simple continued fever, remittent fever, typho-malarial fever, &c. There can at any rate be no doubt that these terms are extensively used to denote many anomalous obscure febrile conditions, which offer difficulties in diagnosis, and that in most of such cases no attempt is made to solve the problem by means of any microscopical or bacteriological examination. Further it cannot but be admitted by all that many cases of continued and remittent fever are seen in natives of India, the diagnosis of which is very difficult, if not impossible, when the clinical symptoms are alone taken into consideration.

It is surely not too much to hope that the routine practice of administering quinine to all cases of fever on the chance of their being malarial will soon become a thing of the past. This régime was formerly no doubt much in vogue, the practitioner looking upon all cases thus treated, which did not yield to this drug within a few days, as being non-malarial and covering his failure in diagnosis under such names as I have mentioned above.

In the case of Europeans at home the difficulty of diagnosis of typhoid fever from the clinical symptoms alone has been investigated from a statistical standpoint by Dr E L Marsh¹

This observer showed that out of over 9,000 cases of typhoid infection carefully investigated and recorded during 25 years in the practice of the large fever hospital of Belvidere in Glasgow, more than 14 per cent were equivocal or doubtful cases, viz, cases in which there were little or no characteristic fever and only negative or disputable symptoms. Further he showed that there was during this same period a considerable error in diagnosis of cases certified and sent in by medical practitioners outside, and that this error might be expressed as nearly as possible by the figure, 28 per cent of the total

number of cases certified as typhoid fever, or in other words, 28 per cent of cases diagnosed outside as typhoid fever were on further investigation found to be something else. Again the same difficulties have been clearly indicated by Major Tull-Walsh, I M S, in a paper in this journal.² This article clearly demonstrates the great assistance which could be rendered to the clinician by an examination of the blood both microscopically and bacteriologically in such cases.

With a view of further emphasising the great value of these aids to diagnosis, it may be noted that even *post-mortem* examination, unless supplemented by a bacteriological investigation of the various organs, does not in every case show evidence of infection with the bacillus typhosus. For there are now many cases on record, which were of the nature of a typhoid septicæmia, and in which the usual and characteristic intestinal lesions of this disease were absent. It is evident that in such cases the diagnosis of the condition could only be made clear by the serum agglutination test during life or by the isolation of the specific bacillus from the spleen and other organs after death. The primary objects then of this communication are —

- (1) To emphasise the fact that in serum agglutination and sedimentation we have at hand a trustworthy and rapid method of assisting in the differentiation of tropical fevers, and
- (2) to point out that cases of typhoid infection are much commoner in the natives of India than is generally supposed, and are in some instances only able to be recognized by means of the reaction which the serum gives with the specific bacillus.

Before the serum test came to be generally applied, and in spite of the difficulties of diagnosis from the clinical symptoms alone, many cases of typhoid fever in natives of India have been put on record in the columns of the *Indian Medical Gazette*. Thus in some recent numbers³ Major A Buchanan, I M S, has stated that in the Nagpur Central Jail some twenty-five cases of this disease have come under his observation within the last six years. Many of these cases showed the symptoms which are generally recognized to be typical of typhoid fever, and in some of such cases diagnosis was confirmed by *post-mortem* examination. On the other hand, the diagnosis of some cases was only cleared up when at the autopsy enlargement and ulceration of Peyer's patches were found. Further Captain Maddox, I M S,⁴ has recorded a case of continued fever occurring in the Chapra Jail. This patient presented no prominent typical symptoms. The

¹ *Indian Medical Gazette*, November 1897, p 413.

² *Indian Medical Gazette*, October 1899 p 366, November 1899 p 403, December, 1899, p 416; January 1900, p 53, May 1900 p 174.

³ *Indian Medical Gazette*, November 1899, p 404.

⁴ *Indian Medical Gazette* February 1899, p 7.

diagnosis of typhoid fever was arrived at only at the *post-mortem* examination

In 1897 much doubt was thrown on the value of the serum reaction as a means of diagnosis of typhoid fever in the native of India. This doubt was the result of some observations published by Major Freyer, R A M C.¹ This officer tested with the bacillus typhosus the serum reaction of several healthy natives of various ages.

The result of the investigation may be summarized as follows —

- (1) A positive reaction was got in the case of seven hospital servants
- (2) No reaction was obtained with the sera of three infants at the breast, viz., from six to ten months
- (3) The sera of five children between the ages of two and four years were tested. A positive reaction was got in the case of four of these
- (4) In the case of six boys, ranging in age between ten and thirteen years, the serum of only one gave a negative reaction
- (5) Further he found a positive reaction given by the serum of a sweeper on the second day of a mild continuous fever, which lasted for five days

Major Freyer looks upon the result of this investigation as giving strong support to the impression fairly widespread among medical men in India that typhoid fever is very prevalent among natives in their childhood, and that few of the younger children escape the disease. He also thinks that in this manner a large proportion of the population acquire a certain protection in early life and so the disease is uncommon in adult life.

If this investigation of Major Freyer could receive corroboration by other observers, it is evident that serum agglutination and sedimentation would lose much of its value as an aid to diagnosis in cases of continued and remittent fevers as seen in the natives of India.

Before proceeding to put on record the results of a similar investigation, it would be well to point out that Freyer in his observations made no attempt to accurately measure the dilutions of serum in the preparations nor to standardize the emulsion with which he brought the diluted serum in contact.² Further he only records whether the reaction was positive or negative and does not indicate in any way after what interval in each case the positive reaction was obtained nor the degree of this reaction.

All my observations were made *macroscopically* by means of the sedimentation tubes

devised by Professor Wright.³ Equal quantities of serum diluted with normal salt solution and of sterile emulsion of the bacillus typhosus, were employed in all preparations. The emulsions were prepared from fresh agar cultures with normal saline solution. A uniform growth on agar of 24 hours was obtained. This was emulsified with sterile normal salt solution, a fixed quantity of which, viz., 0.25 cc was used for every square centimetre of agar culture. The bacteria were then killed by heating at 60°C for from 10 to 15 minutes, and finally 0.5 per cent carbolic acid was added.⁴ All observations were recorded from 18 to 24 hours after putting up the preparations.

With a view of directly controlling Freyer's observations, I examined in this way thirty-six samples of blood of healthy natives, viz., assistants, clerks and menials in this laboratory. These may be classified as follows — Goanese, 1, Parsees, 2, Mohamedans, 9, Hindoos, 16, women (Hindoo), 8.

In the course of these estimations it was found that in dilutions of 1 in 10 some of the specimens of blood gave a trace of sedimentation, in no case was there a complete reaction. The majority, however, did not give any reaction in this dilution. In dilutions of 1 in 20 in only four specimens was any sedimentation obtained, and in these cases it was only a mere trace after twenty-four hours. In the remaining thirty-two instances the result was absolutely negative in this dilution.

These results then are indirect contradiction to those obtained by Major Freyer, and certainly go to show that the serum reaction is quite reliable as an aid to the diagnosis of the continued fevers in the native.

Having thus fixed the agglutinating power of normal sera of the native of India, we may now proceed to put on record the cases in which complete sedimentation above these normal limits was obtained.

In August and September of 1900 a series of six cases of continued fever was treated in the Cama Hospital, Bombay, under the care of Miss A. M. Benson, M.D., First Physician. Five of these cases were children from the Convent School, Bandora, the sixth was a Goanese woman from the bazaar. Of the five convent children, one was a pure European. The detailed record of this case is omitted. It may, however, be noted in passing that the serum, tested the day after defervescence of the fever, gave a complete reaction in a twenty-fold dilution and a trace of sedimentation in a fifty-fold dilution. The remaining four children were Roman Catholic converts, and although they all appeared to be pure natives, it is impossible

¹ *British Medical Journal*, August 7th, 1897, p. 829.

² The dilutions were made by means of a platinum loop. He merely states that each dilution used was about 1 in 12, and that observations were taken after half an hour and also after 24 hours.

³ *British Medical Journal*, February 6th, 1898.

⁴ A similar method for preparing emulsions of *Micrococcus Melittensis* has been described by me along with Major O. Birt, R A M C, vide *Lancet*, September 9th, 1899.

to say certainly that they were not in two instances of mixed blood¹

The type of fever indicated the diagnosis of typhoid fever so strikingly and was so markedly unlike the usual cases, that Dr Benson invited me to investigate the serum reaction and furnished the clinical and *post-mortem* notes given here

Two of the cases proved fatal shortly after admission, before the serum reaction had been observed. A *post-mortem* examination, however, confirmed in both cases the diagnosis which had been arrived at clinically during life. The following is a short summary of this series of cases —

CASE 1—A M, aged 16, Native Christian from Bandora Convent. Patient was admitted into hospital on the 16th August 1900 with a history of having suffered from fever for about one week. During her residence in hospital there were no marked symptoms. The bowels, at first loose, became so constipated that aperients had to be constantly given. Pain in the abdomen was complained of, but palpation revealed nothing definite. Delirium was present from the 19th to 23rd August, previous to this she had been restless and troublesome. The temperature (*vide* Chart 1) came to normal about the 25th day of the disease. Convalescence was uneventful.

The serum reaction with bacillus typhosus was tested on the 7th September with the following result —

DILUTIONS.

Date	10	20	50	100	200
7th September 1900	Complete.	Complete	Marked	Trace	Nil.

CASE 2—A L, aged 12, Native Christian, from Bandora Convent, admitted into hospital on the 18th August 1900. It was stated that patient had been suffering from fever and cough for about a month before admission. For temperature *vide* Chart 2. Bowels were at first loose but afterwards became constipated. No abdominal symptoms. No spots, the urine contained a considerable quantity of albumen. Convalescence was uneventful.

The serum reaction with the typhoid bacillus was tested on the 8th of September, *viz.*, eleven days after the temperature had reached normal. The following result was obtained —

DILUTIONS.

Date	10	20	50	100	REMARKS
8th September 1900	Complete	Marked	Trace.	Nil	

CASE 3—L S, aged 9, Native Christian from Bandora Convent. Patient was admitted into hospital on the 20th August 1900. She had suffered from continued fever for a week before admission. For temperature, *vide* Chart 3.

On admission the child was very ill. The feet were oedematous, much pain was complained of in the abdomen,

¹ These children had Portuguese names and were variously styled Portuguese, Eurasian and East Indian. They appeared, however, to be pure natives, and these denominations are of no value in proof to the contrary.

and sordes had collected about the lips and teeth. There was great weakness and delirium was present. The pulse was small and quick. The urine was scanty and contained much albumen. Diarrhoea was present during the time she was under observation, and vomiting occasionally occurred. For a few days after admission, her condition improved, but soon symptoms of uræmic poisoning complicated with laryngitis set in. Death took place in the third week of the disease. There was some hæmorrhage from the bowel on the day of death.

Post mortem examination showed Peyer's patches to be deeply congested and swollen, while a number of the solitary follicles were in the same condition. The mesenteric glands were also much enlarged and congested.

The spleen was enlarged, dark in colour, soft and friable.

The kidneys were deeply congested, while the bladder showed large submucous hæmorrhages.

CASE 4—V F, aged 14, Native Christian, from Bandora Convent. Patient was admitted into hospital on the 23rd August 1900. She had suffered from continued fever for eleven days previous to this time. On admission patient was unconscious with subsultus and tremors. There was slight cough and diarrhoea. The tongue was thickly coated, and the lips and teeth were covered with sordes. The pulse was small, feeble and rapid. The urine contained a large amount of albumen. For temperature, *vide* Chart 4.

Patient remained in much the same condition till death, which took place on the 6th day after admission, *viz.*, about the 17th day of the disease.

Post mortem examination, which was only partial as permission was refused, showed Peyer's patches to be much swollen and injected, one in the upper part of the ileum had ulcerated. The mesenteric glands were also swollen and congested.

CASE 5—E M, female, aged 24, Goanese, from the Bazaar, Bombay. Patient was admitted into hospital on the 29th August 1900. She had suffered from fever, accompanied by vomiting and diarrhoea, for ten days before admission. Diarrhoea continued while in hospital, the stools were large, loose and characteristically 'typhoid'. A few days after admission definite rose spots were seen. The spleen was not enlarged. The tongue was red but not coated. The urine was normal. The temperature (*vide* Chart 5) fell to normal in the 4th week of the disease. After this, convalescence was quickly established.

The serum reaction with bacillus typhosus was tested on the 8th September with the following result —

DILUTIONS

Date	10	20	50	100	200
8th September 1900	Complete	Complete	Complete	Marked	Trace.

Before proceeding to record several other cases of typhoid fever in the natives of India, which have come under my observation, it is interesting to note that several other cases occurred among the inmates of the Convent at Bandora at the same time as those which were treated in the Cama Hospital, and which have been detailed above. I am indebted to the kindness of Dr de Monte for the following information — Among the inmates of the Convent there were two other cases of typhoid fever. Both of these children were pure natives of India. One of them was treated at her home in Girgaum and died there, the other, was under the care of Dr de Monte, and ultimately made a good

recovery Two day scholars, both natives of India, likewise suffered from an attack of this disease

About the same time as this Dr de Monte had under his care at Bandora two other cases of typhoid fever, both natives of India, but not belonging to the Convent. One a young man of about 22 years of age, died from haemorrhage from the bowels, while the other ultimately recovered, although there was at one time considerable intestinal bleeding

From the above facts it will be seen that there was evidently at this time a mild outbreak of typhoid fever in the Bandora Convent as well as in the neighbouring village

I may now in conclusion pass on to record, in as brief a manner as possible, several other cases of this disease in the persons of natives. The agglutination reaction in all instances was tested by me. For this purpose, in the cases outside of Bombay, blood was sent to the Laboratory by the medical officer under whose care the case was being treated. I am indebted to these gentlemen for permission to publish these cases, and for the brief clinical notes herewith appended

Case 6—A Hindoo youth, about twenty years of age, seen in consultation with Lieutenant Colonel Dimmock, I.M.S., on 24th May 1900. This lad was of a wealthy family and was being treated in his own home. He suffered from severe fever, of a more or less remittent type, for about four weeks. Diarrhoea was present, but was neither excessive nor typical of typhoid fever. The case was complicated by an acute nephritis, the urine at one time containing a large quantity of albumen. Patient ultimately made a good recovery. The serum reaction with the typhoid bacillus was tested about the end of the third week of the disease with the following results—

DILUTIONS

Date	10	20	50	100	150	200	300	400	600
24th May 1900	Complete	Complete	Complete	Complete	Complete	Complete	Nearly complete	Marked	Nil

Case 7—This case occurred in the Central Jail, Nagpur. The following notes are supplied by Major Andrew Buchanan, I.M.S., Superintendent

"This is the 28th case of typhoid fever that has been recorded in Nagpur Jail

K. L., male, Brahmin, aged 28. A full account of the symptoms will not be given as these were the same as are met with in ordinary cases. The main points that are worth notice are—

- (1) The fairly characteristic temperature chart (*vide* Chart No. 7) led to a diagnosis of typhoid fever on the 5th day and the following note was then made. Gurgling on pressure in the right iliac fossa, tongue has the characteristic yellow coating in the centre with red edges, there is slight deafness, some delirium at night, slight cough, pupils dilated, little sweating, frontal headache
- (2) Delirium began early and continued for a much longer time than is usual
- (3) The temperature was not high and was usually between 101° and 102° F, but nevertheless the case was one of the most severe that has recovered
- (4) The pulse about the 21st day was very weak and could scarcely be counted. It was over 150 per minute
- (5) The chlorine water treatment was followed throughout
- (6) This case occurred in August. Most of the former cases occurred at the same time of

the year. There has been an unusually large number of cases of diarrhoea in the past season, and it was formerly noticed that typhoid fever is more likely to occur at a time when diarrhoea is prevalent"

The serum reaction with bacillus typhosus was tested on the 4th September, *i.e.*, on the 19th day of the disease. In 1 in 20 dilution agglutination as seen under the microscope was absolutely complete in a few minutes. No other dilution was tried

Case 8—This case occurred in the Central Jail, Bhagalpur. The following notes were kindly supplied by the Superintendent, Major W. J. Buchanan, I.M.S.

"B. T., aged 40, a high caste Brahmin. Patient had been in Bhagalpur Jail since 11th July 1900, *i.e.*, one month and 18 days before the beginning of the present illness. He worked in the general cook house as a Brahmin cook

Patient was admitted into hospital on the 30th August 1900 with high fever. The fever (*vide* Chart No. 8) remained persistently high. Owing to the presence of bronchitis and frothy sputum the case was at first thought to be one of broncho pneumonia. The bowels were at first constipated, but after the use of a purgative, *i.e.*, castor oil, the stools may be daily described as "thin, liquid and yellow in colour". In the last week of pyrexia the stools were offensive and had the characteristic smell of typhoid stools

Patient was mildly delirious during the third week, but had no other serious symptoms except prostration. The spleen was not enlarged to the level of the rib margin, but could easily be felt under the rib arch

There was slight tympanites in the last week of fever but no iliac gurgling was detected. Tongue was white, furred, but moist

The urine was normal"

The serum sedimentation reaction with the typhoid bacillus was tested on the 28th September, after the temperature had been normal for some days. The following result was obtained—

DILUTIONS

Date	10	20	50	100	REMARKS
28th September 1900	Complete	Complete	Trace	Nil	

Case 9—This case was treated in the Goculdas Tejpal Hospital Bombay, under the care of Lieutenant Colonel W. H. Henderson, I.M.S.

R. R., Policeman, Hindu, aged 25. Patient was admitted into the Goculdas Tejpal Hospital on the 24th September 1900, suffering from fever. He complained of having felt ill and unable for work for a fortnight before admission, but no definite symptoms were prominent during this time

For temperature, *vide* Chart 9

Bowels were constipated throughout his residence in hospital. The tongue was coated and furred

There was slight delirium during the third week, but at no time was this a prominent symptom

Quinine which was freely given had no effect on checking the fever

The serum reaction with bacillus typhosus was tested on the 27th October, *i.e.*, two days after the temperature had reached normal. The following result was obtained—

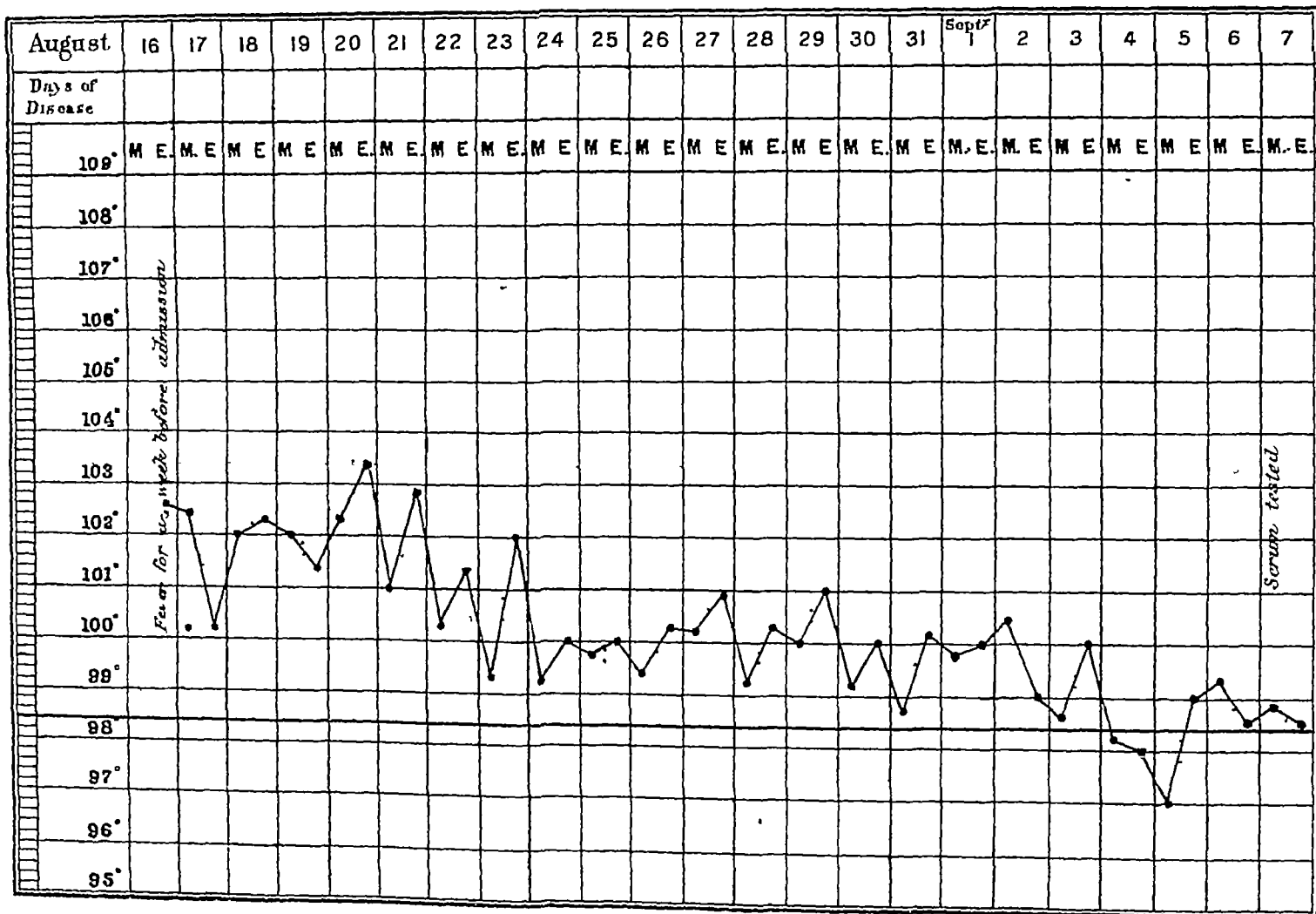
DILUTIONS

Date	10	20	50	100
27th October 1900	Complete	Complete	Trace	Nil

TYPHOID FEVER IN THE NATIVES OF INDIA, ITS DIAGNOSIS BY MEANS
OF THE SERUM SEDIMENTATION RE-ACTION

BY CAPTAIN GEORGE LAMB, M B, I M S (GLAS)

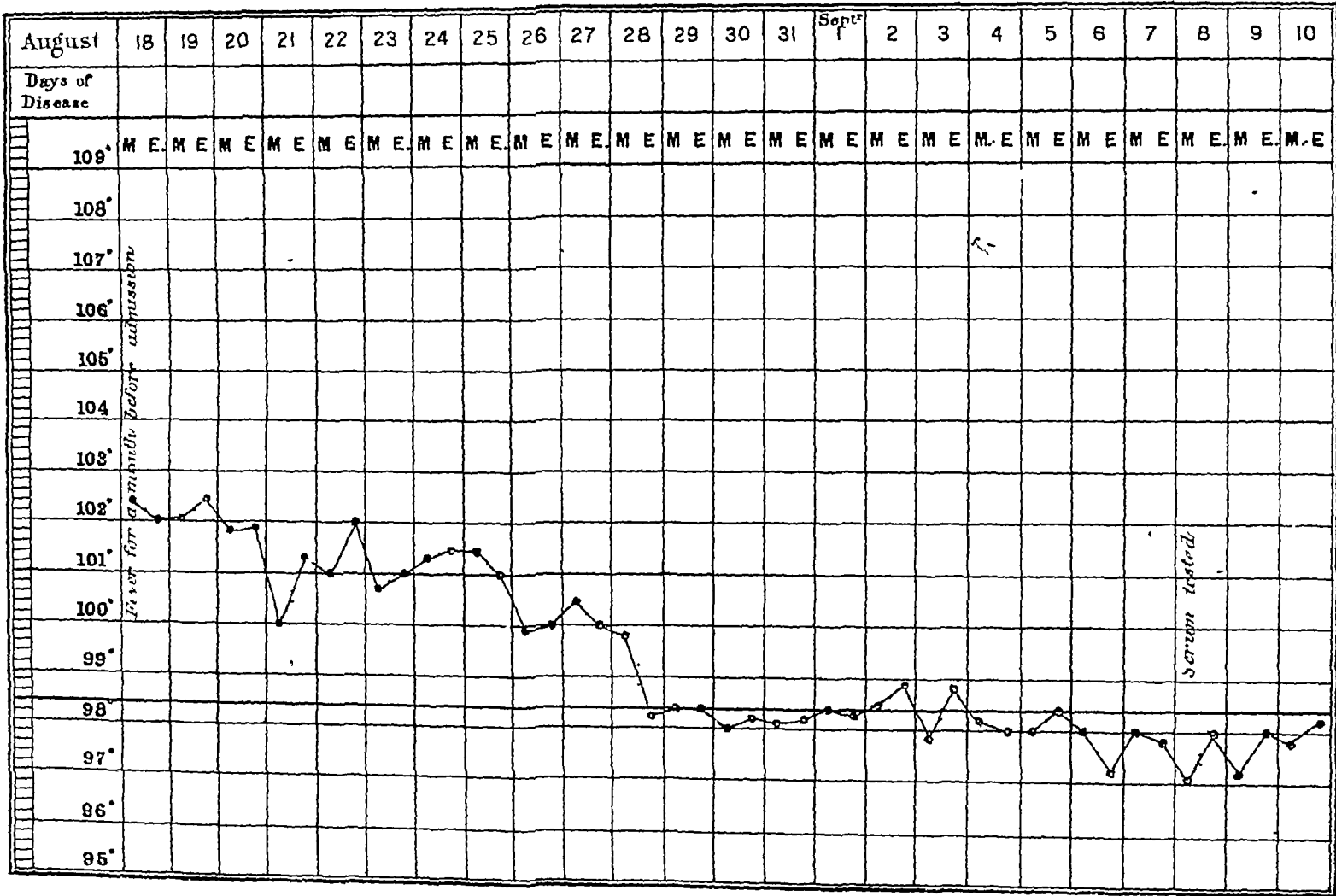
CHART 1 A M



TYPHOID FEVER IN THE NATIVES OF INDIA, ITS DIAGNOSIS BY MEANS
OF THE SERUM SEDIMENTATION RE-ACTION

By CAPTAIN GEORGE LAMB, M.B., I.M.S. (GLAS)

CHART 2 A L



TYPHOID FEVER IN THE NATIVES OF INDIA, ITS DIAGNOSIS BY MEANS OF THE SERUM SEDIMENTATION RE ACTION.

BY CAPTAIN GEORGE LAMB, M B, I M.S (GLAS)

CHART 3 L S

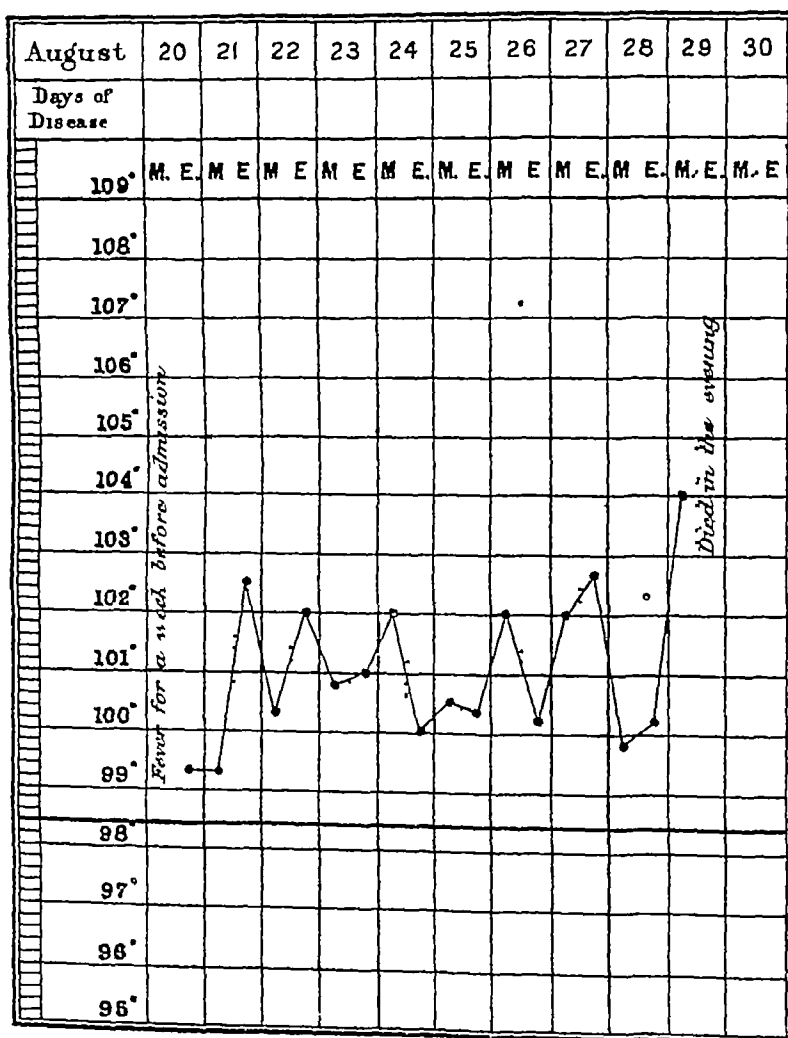
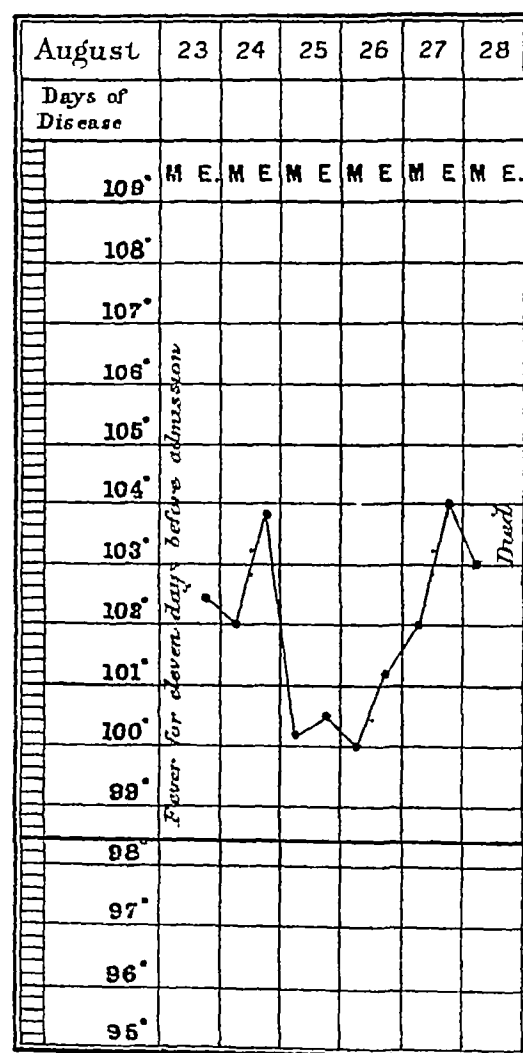


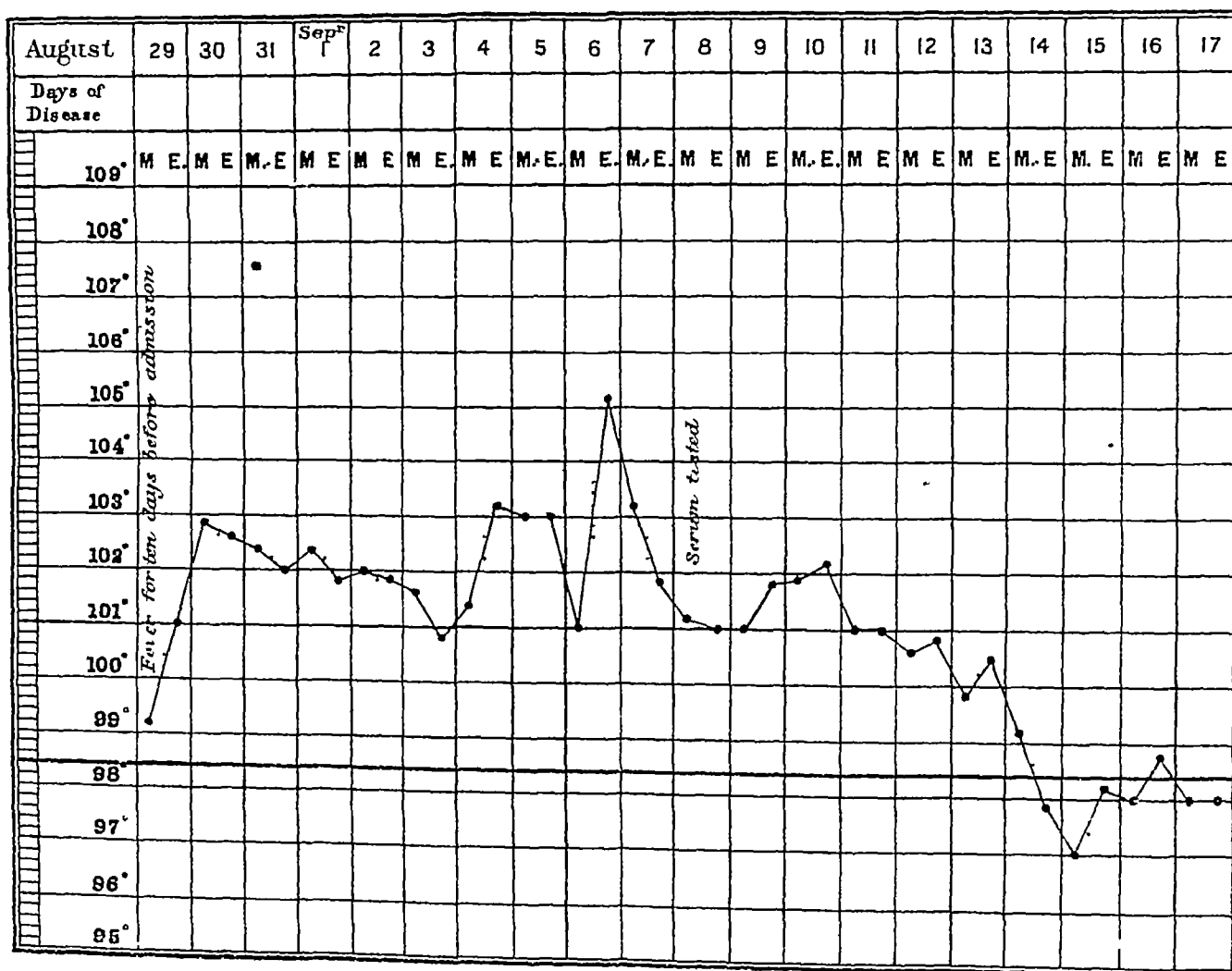
CHART 4 V F



TYPHOID FEVER IN THE NATIVES OF INDIA, ITS DIAGNOSIS BY MEANS OF THE SERUM SEDIMENTATION RE-ACTION

BY CAPTAIN GEORGE LAMB, MB, I M S (GLAS)

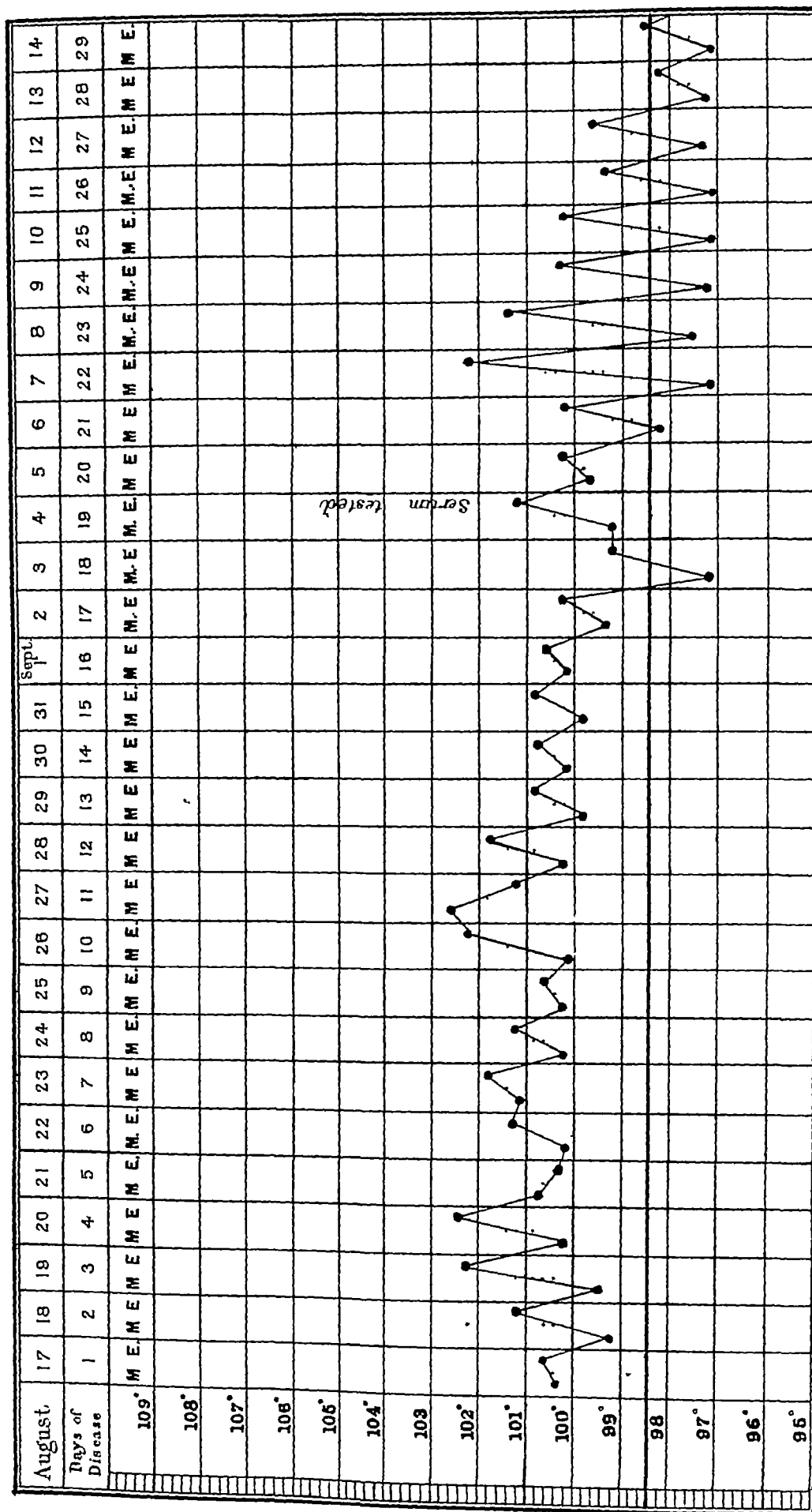
CHART 5 E M



TYPHOID FEVER IN THE NATIVES OF INDIA, ITS DIAGNOSIS BY MEANS
OF THE SERUM SEDIMENTATION REACTION

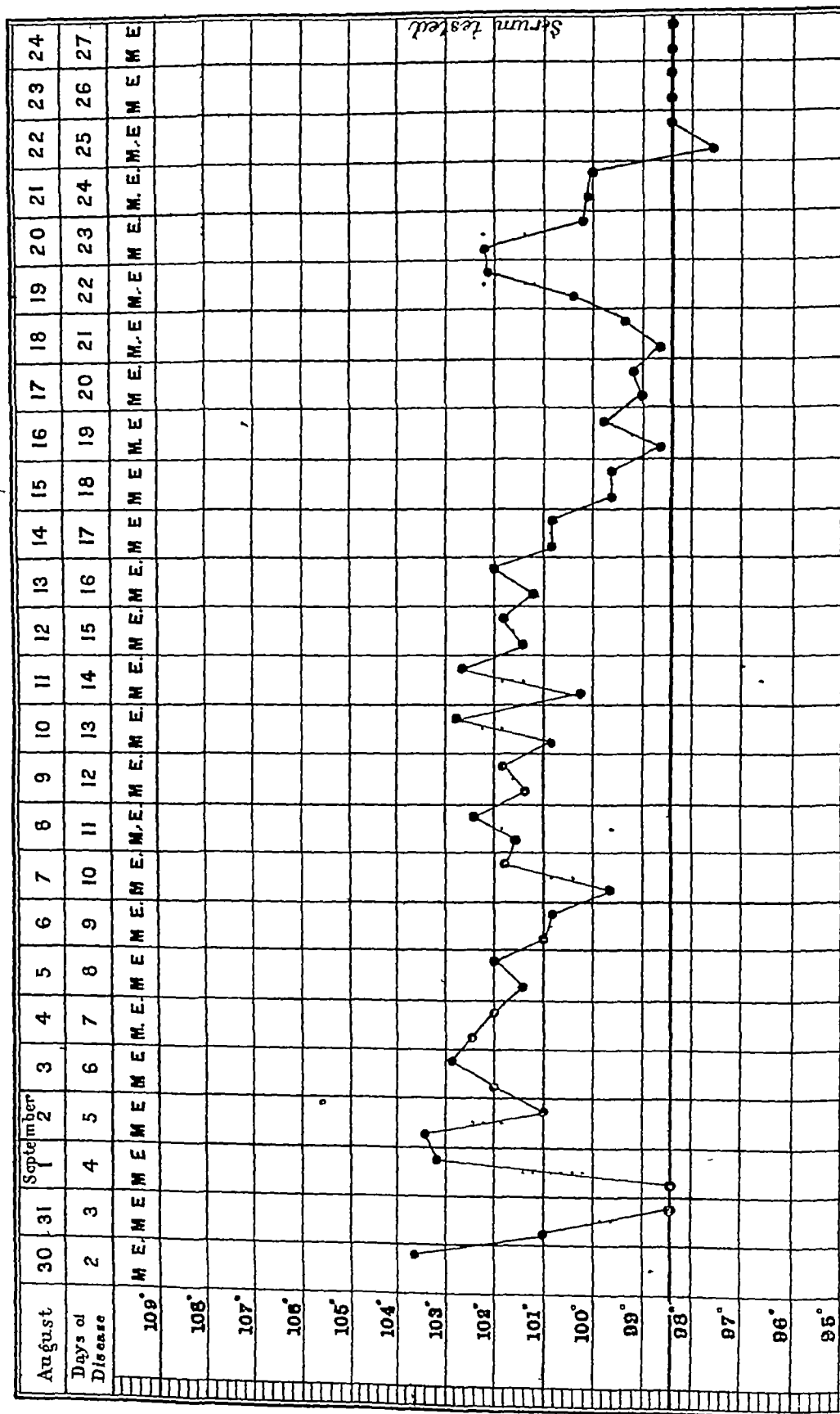
By CAPTAIN GEORGE LAMB, M.D., I.M.S. (GLAS)

CHART 7 K L



TYPHOID FEVER IN THE NATIVES OF INDIA, ITS DIAGNOSIS BY MEANS
OF THE SERUM SEDIMENTATION REACTION
BY CAPTAIN GEORGE LAMB, M.B., I.M.S. (GLAS)

CHART 8 B.J



MEANS

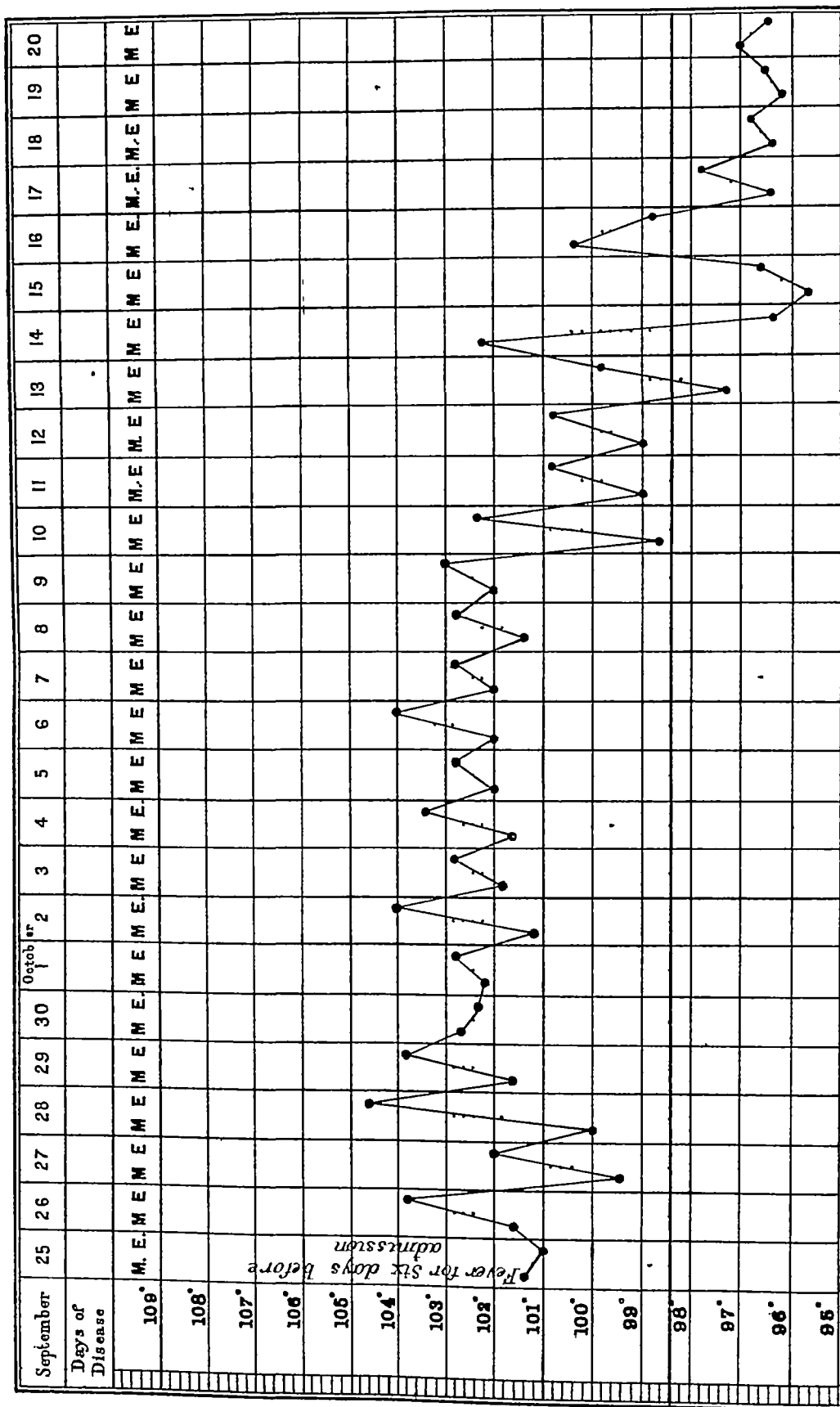
18 19 20 21 22 23 24 25 26 27 28 29

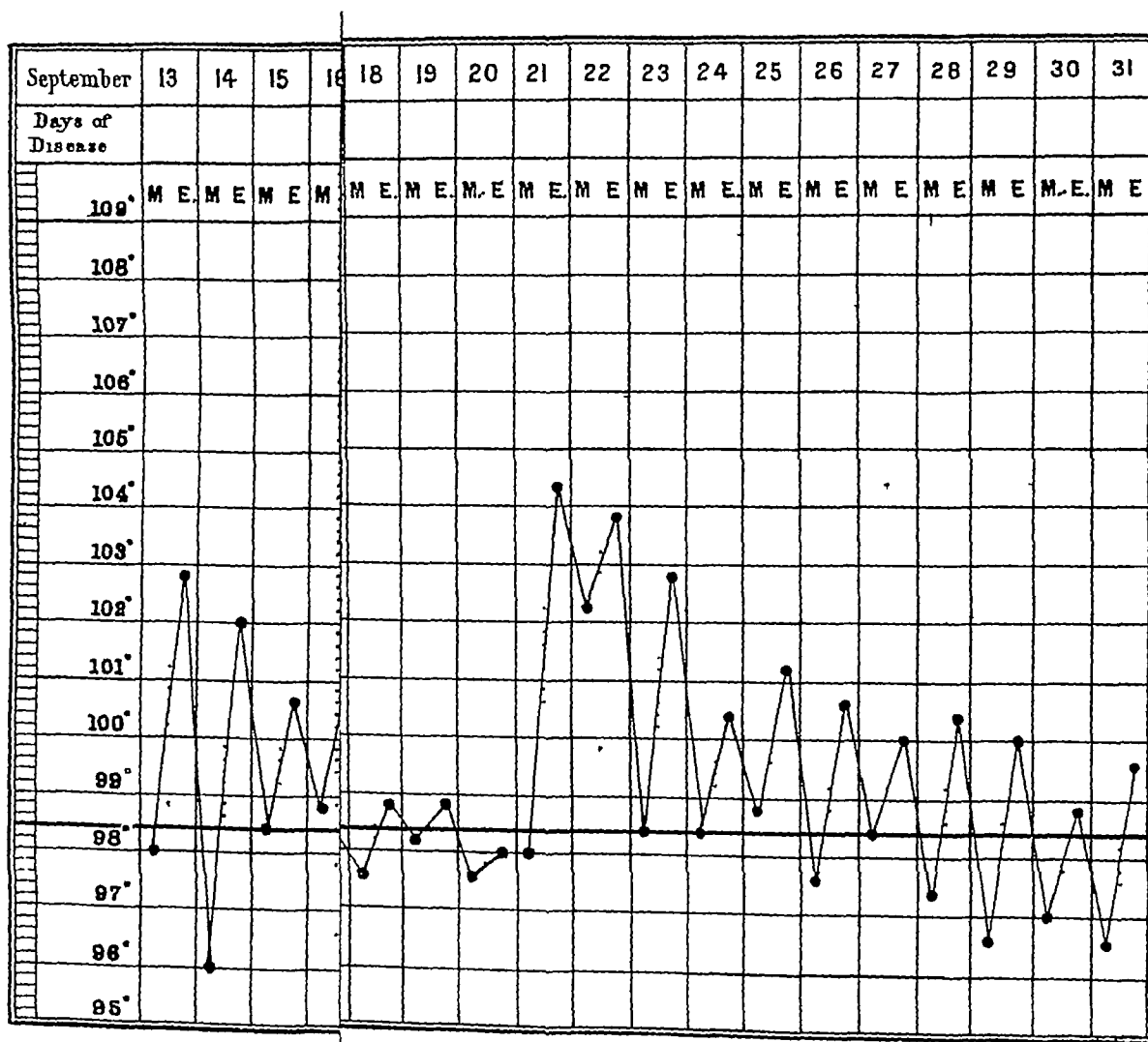
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TYPHOID FEVER IN THE NATIVES OF INDIA, ITS DIAGNOSIS BY MEANS
OF THE SERUM SEDIMENTATION RE-ACTION.

By CAPTAIN GEORGE LAMB, M.B., I.M.S. (GLAS.)

CHART 10 V A





Case 10—This case was treated in the Sassoon Hospital at Poona, under the care of Lieutenant Colonel W H Henderson, I M S

V A, Medical Student, Brahmin, aged 23 Patient was admitted into hospital on the 25th September 1900, suffering from continued fever, said to be of about six days' duration On admission, the temperature was 101° F He complained of severe headache and constipation The tongue was furred and coated in the centre, and red at the tip and edges

For temperature, vide Chart No 10

During the first week of residence, constipation continued This gave way to a mild diarrhoea, the stools being then described as typical of typhoid fever

The abdomen became tympanitic during the latter part of the fever

The nervous symptoms in the third week became marked, they consisted of great exhaustion and prostration and later on severe collapse, when stimulants had to be freely used

Convalescence was uneventful, and patient was discharged on the 6th November The serum sedimentation reaction with bacillus typhosus was tested on two occasions with the following result —

DILUTIONS

Date	10	20	50	100
3rd Nov ember	Complete	Complete	Complete	Trace
6th Nov ember	Do	Do	Do	Do

Case 11—This case was also treated in the Sassoon Hospital, Poona, under the care of Lieutenant Colonel W H Henderson, I M S For the following notes I am indebted to the kindness of Assistant-Surgeon Barucha —

N T, aged 12 years, Hindoo Maratha Patient was admitted into hospital on the 18th September 1900, suffering from fever said to have been of about twenty days' duration On admission he was semi-conscious, and in a state of restlessness and delirium There were no prominent abdominal symptoms

For temperature, vide Chart 11 Patient was semi-comatose and delirious while the fever remained high He was never quite unconscious, but could only be roused with difficulty With the defervescence of fever, the brain symptoms subsided considerably

At no time was there either any tympanites or marked diarrhoea The tongue remained clean throughout There were in short, never any abdominal symptoms Convalescence was slow, the temperature showing a slight evening rise for some time During convalescence he suffered from pain in both knee joints, and also along the course of sciatic nerve

The serum sedimentation reaction with both bacillus typhosus and micrococcus melitensis was tested on the 26th November, with the following result —

1 Bacillus Typhosus

DILUTIONS

Date	10	20	50	100	Remarks
26th Nov ember 1900	Complete	Complete	Complete	Very well marked	No higher dilutions

2 Micrococcus Melitensis

DILUTIONS

Date	10	20	50	100
26th November 1900	Marked	Trace	Nil	Nil

The diagnosis of this case was a puzzle throughout It was only the sedimentation reaction which the serum gave with bacillus typhosus that cleared it up

EXPERIMENTAL INOCULATION OF
MALARIAL FEVER IN NAGPUR.

By ANDREW BUCHANAN, M D,

MAJOR, I M S,

Superintendent, Central Jail, Nagpur, O P

In the article which appeared in the February number of the *Indian Medical Gazette*, I promised to send an account of the results of the experiments which had been made with a view to ascertaining whether the mosquito (anopheles) conveys the malarial germ

Experiments have been made with different kinds of malarial fever, but at present only the results in cases of Benign Tertian will be given

We see then that out of seven cases who volunteered to be bitten by the mosquitoes four were attacked by fever, but in only two of these did we find the Benign Tertian parasite In case (1) a parasite was found but it was a young form and there was no proof that it was a Benign Tertian

Taking the two cases in which parasites that were undoubtedly those of Benign Tertian were found, we see that the fever came on in one case 22 days after the first bite, and in the other about 15 days after the first bite It may be said by those who are opposed to the mosquito theory that the fact that the attacks of fever came after the mosquito bites was entirely accidental This was the objection raised against the cases which were experimented on in Italy We have carefully examined the blood in every case that has been admitted for fever while these experiments were being carried on, and out of a population of 1,200 (odd) there were only two other cases admitted for Benign Tertian If the fever in these two cases were not the result of the mosquito bite would it not be curious that out of seven individuals who were bitten by mosquitoes two should get Benign Tertian fever, while only two other cases occurred among about 1,200 men? and would it not be still more curious that the time when the fever should come on, was about a fortnight or three weeks after they had been bitten by the mosquitoes

The fever in all these cases was milder than in the cases which were admitted to hospital without having been bitten voluntarily by mosquitoes. Perhaps the mosquitoes had not been fed originally at a time when the flagellar bodies were ripe for giving out flagella or perhaps there may be other ways in which the malarial parasite can be introduced into the human body.

fever Crescents will be found at this time,
Third—Then comes the secondary or flagellar fever and flagella will be found at this stage if the blood is drawn. It is generally believed that exflagellation takes place only outside the body after the blood has been drawn. There is no doubt that exflagellation is hastened by the drawing of the

BENIGN TERTIAN

Serial No	Name	* 1 Case on which mosquitoes were fed	Date when fed on A	No of bites on A	Date when fed on B	No of bites	Date when B was attacked by fever	Kind of parasites found	Nature of fever
1	Tilak Ram	Narayan	17, 18, 21, 25, 28, 30 December	83	20, 27, 29, December, 1st January	108	22, 24, 26 December	Young form changing shape rapidly	Distinct Tertian 3 paroxysms, temperature ranging to about 103 each time, on 28th tem 103.6
2	Ganshin	Shankmalibeb	24th to 27th December	34	From 27 12 00 till 8 1 01 every night.	78	10th or 12th (Temp was not taken till 27th January)	Pure Benign Tertian	He had had fever before, but temperature had not been taken as he had not reported sick.
3	Pahlad	Thibroo	3 1 00	12	9 1 01 till 17 1 every night	22	31 1-01	Typical Benign Tertian	On 31st January and 1st February temperature went over 101
		Yeshwanta	26 1 01	5	30 1 01 31 1 01				
4	Phandia	Thibroo	3 1 01 to 7 1 01	14	9 1 01 to 20 1 01 daily	20	20 1 01	Nil	A very large number of eosinophile cells, 6 in a field and in one field (stained specimen) 32.
5	Bisnoo	Thibroo	1 1 01 to 4 1 01	14	9 1-01 to 23 1 01	44	Nil	Nil	Nil
6	Motiram	Thibroo	27 12 00 to 30 12 00	17	31 12 00 to 7 1 01	16	Nil	Nil	Nil
7	Changin	Sadoo	3 1 01 to 6 1 01	22	9 1 01 to 19 1 01	50	Nil	Nil	Nil

* A = the man on whom mosquitoes were fed primarily
 † B = the man who was bitten by the infected mosquitoes

We hope to publish later on the results of the investigations which have been made here with the assistance of Colonel Quayle, I M S, Dr Agnes Henderson and Assistant-Surgeon Kane. Five kinds of Malarial fevers are described by Celli and Manson. We have found four here. The great majority are malignant Tertian, of Quaitan and Benign Tertian we have had nine, and of Quotidian two. The unpigmented Quotidian described by Celli and Manson has not been found. The crescents of the Quotidian are, we believe, larger and contain pigment which is in longer rods than that which is found in the Malignant Tertian.

In untreated cases of Malignant Tertian, the chart often shows three fairly distinct periods—

First—A Tertian fever with a gradual slope downwards, that is, the paroxysms get gradually less,

Second—An interval of four or five days when there is no fever, or only slight

blood, but is it not possible that exflagellation may take place also inside the body? We shall advance arguments which seem to at any rate establish a strong probability that exflagellation may take place inside the human body, and that the secondary or flagellar fever is the accompaniment of this exflagellation. If there is a fairly definite period during which exflagellation occurs, and if the mosquito can only convey the fever if it has bitten the infected individual at the time when the flagellar bodies are ripe, then the recognition of the flagellar period might be of considerable practical importance.*

A few additional observations in regard to mosquitoes may be added here—

Culex—A record has been kept to show the number of culex eggs taken from one small

* We have been allowed to see many charts of these cases in which after the interval there is a return of fever with numerous flagella. This question of secondary flagellar fever is one of great interest.—ED, I M G

"tanka" The number of egg boats collected from this tanka (which is about 2 feet square) in December was 17,000 odd, and reckoning at the rate of 250 eggs per boat the number of eggs would be over 4½ millions. The largest number of "boats" collected from this tanka in one night was 1,609, which reckoning at the same rate would give over four lakhs of eggs. The number of egg boats collected in January was 2,410. The wet minimum thermometer went down to 45, and two days later and for some time afterwards no eggs were laid. At the end of January the temperature rose (wet minimum 59), and the mosquitoes began laying eggs early in February. On the 13th February the wet minimum again went down to 45 F, and two days later and for some time afterwards the culex stopped laying. Perhaps this may help to elucidate a point on which there was some difference of opinion as shown in articles which appeared in the columns of the *Pioneer* a few months ago. One writer held that mosquitoes are more common in the cold weather and another maintained the contrary. "Cold weather" is an indefinite term, and the temperature in the cold weather of one place may be much higher than the temperature in the cold weather of another place. A few degrees difference in the temperature may make a considerable difference in the activity of the mosquito.

Anopheles—The small subsoil drain from which we got our supply of anopheles dried up in December, but occasionally some clean water was poured into this drain, and a few small pools were made to attract the anopheles. They came regularly throughout the winter in small numbers, and we were thus able to get a supply for the experiments. We had some difficulty in keeping the anopheles alive when they were kept in glass tumbler with water in the bottom of the tumbler. Since we put a small amount of mud in the glasses so as to give them a resting-place they are doing better. The larvæ feed greedily on the dust (? pollen) which is shaken from grass seed.

Method of biting—The individual who is to be bitten puts the front of his forearm over the glass which is covered with fine mosquito curtain. The forearm is previously moistened with water. The time they are allowed to bite is from 7 to 10 P.M.

Catching anopheles—The men who collect the living anopheles say that the anopheles hide in a black coat, but avoid a white coat, so they hang up one or two black coats in the Hospital Ward.

Number of full grown anopheles caught and number of admissions for fever—In the previous paper the numbers for November and December were given, but for the purposes of ready comparison these numbers will be given again together with the numbers for the months of December, January and February.

Month	Week	Weekly Total of admissions for fever	Weekly total of Anopheles caught	Lowest record by wet minimum thermometer
October 1900	1st	37		61
"	2nd	20		58
"	3rd	32		56
"	4th	16	117	55
Total		105	117	
November 1900	1st	10	38	53
"	2nd	6	62	53
"	3rd	9	19	54
"	4th	9	20	51
Total		34	139	
December 1900	1st	28	25	55
"	2nd	41	62	52
"	3rd	27	51	52
"	4th	23	40	54
"	29 31	6	11	55
Total		125	189	
January 1901	1st	8	22	45
"	2nd	14	9	49
"	3rd	10	12	47
"	4th	11	0	50
"	29 31	9	0	52
Total		52	43	
February 1901	1st	5	5	53
"	2nd	11	6	45
"	3rd	8	7	47
"	4th	2	0	46
Total		26	18	

It should be explained, however, that there are many cases of what have been called "recurrents," that is, cases that have had fever sometime previously, and in which the parasites, not having been killed, resume activity.

THE DISTRIBUTION OF ANOPHELES IN ELLICHPUR CANTONMENT

(FOR THE I M & COLLECTIVE INVESTIGATION)

BY W GLEN LISON, M.B.,

CAPTAIN, I M S

THERE is no doubt that Ellichpur Station is one in which malarial fever is very prevalent.

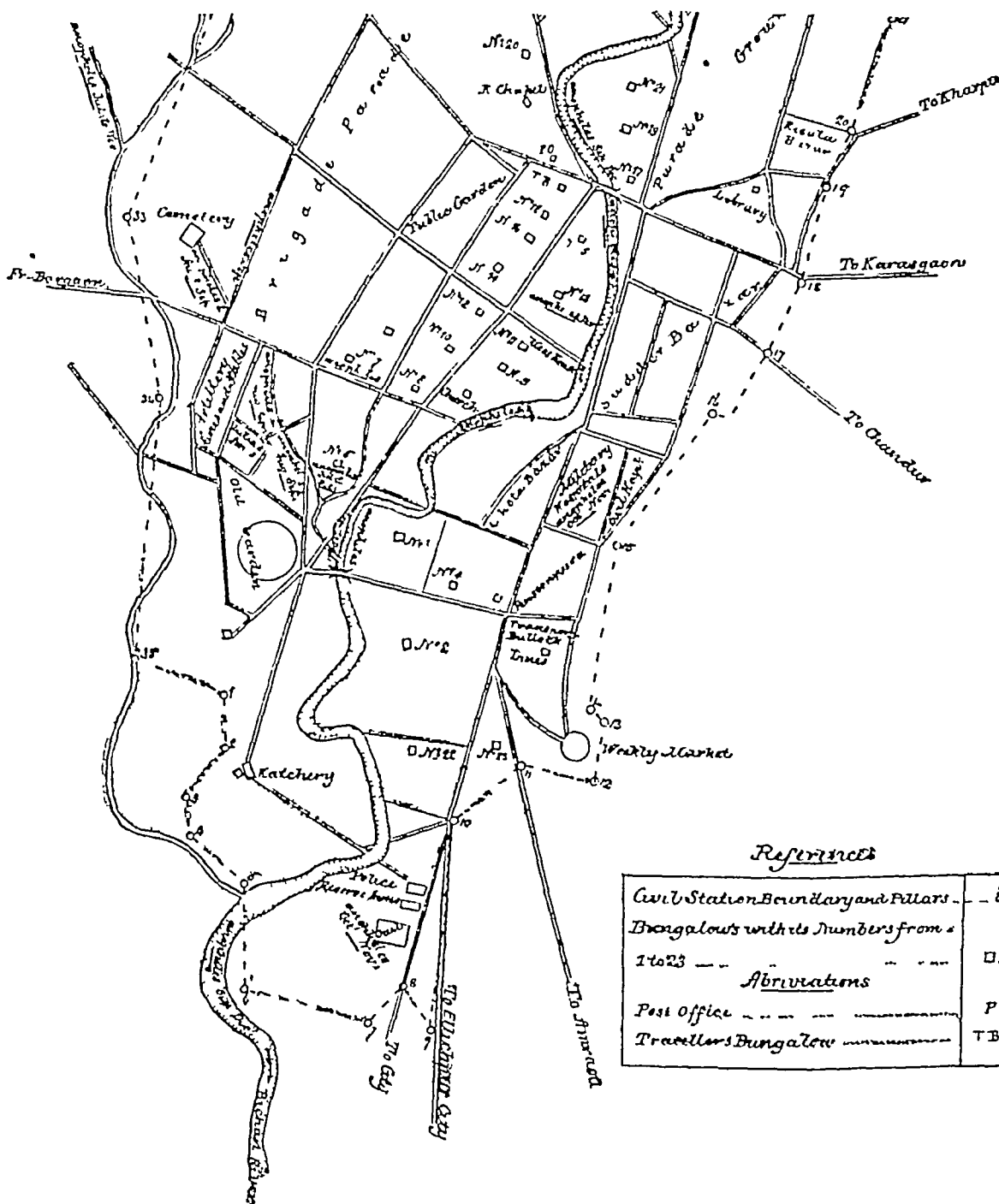
Of the total admissions during the year ending 31st December 1900, to the Civil Hospital (out and indoor patients), 20 per cent were for malarial fevers. Of the total admissions to the Military Hospital 41 per cent were for malarial fever. Of the total admissions to the Jail Hospital 50 per cent were for malarial fever.

Ellichpur Cantonment is situated about five miles from the base of the Satpura Mountains on an extensive black cotton plain. Through the midst of the cantonment runs a river which

in the rains is a rushing torrent, but towards the end of September, begins to dry up. Where the bed of the river, to any depth, consists of loose stones, by the end of September it becomes quite dry, but where solid rock approaches the

been removed to bank up the edge of the road. In these irregular ditches and holes water accumulates towards the latter end of the rains. These collections of water form suitable breeding places for anopheles larvæ.

Map of Ellichpur Civil Station—Scale 1,200 feet 1 inch



surface pools of water with a gentle current through them are formed.

The surrounding country is so flat that the surface drainage is not good.

On each side of the roads a deep rather irregular ditch is constructed. Every here and there on the further side of the ditch shallow excavations are to be found where the soil has

Investigations on the extent to which anopheles mosquitoes were to be found in the station were begun in the middle of July. The rains had by this time fully developed, and many collections of water existed in the station. From the accompanying map it will be seen that anopheles breeding places (marked Anopheles L, Sept-Oct) were first found near

the cemetery in July, also in a small nallah near the Naisalla Road. As the season advanced in the month of August, more places were found, especially in a nallah near bungalow Nos 5 and 6. Again in the month of September the number of breeding places had greatly increased. The river had by that time considerably fallen, and green weed had collected on its surface. Anopheles larvæ were now to be found in considerable number in the river. (When these investigations were begun in the month of July, the river was a rushing torrent, and no anopheles larvæ were of course found in it.) In this month (September) anopheles larvæ were to be found in several collections of water by the side of the road formed in the irregular ditches and excavations above referred to.

In October these collections of water by the roadside had dried up.

In November the chief breeding places were to be found in the river, but at bungalow No 23 in a small cistern near a well a number of anopheles larvæ were found in this month.

In December only in the river could larvæ be found in the station. The greater part of the river had dried up, but from bungalow No 20 to a point opposite the jail a few pools here and there connected by small channels of water still existed. In these pools many anopheles larvæ were found.

With regard to the distribution of the adult insect, anopheles mosquitoes were plentifully found in bungalow No 5 in the months of July to December, during the same months though not so plentifully in bungalow No 7. In bungalow No 13 they were found in the month of November. In the Military Hospital and in the Jail they were found in the months of October and November. A few specimens in these months were obtained from the bazaar, but no thorough search was made for them there. It is noteworthy that just when adult anopheles mosquitoes were most abundantly found, viz, in the months of September, October and November, then fever was most prevalent in the station. In these months alone there were more admissions to hospital for fever than during all other months of the year put together. Compare for example the admissions for fever to the Military Hospital (where correct diagnosis is always ensured).

January, 4, February, 12, March, 5, April, 3, May, 6, June, 5, July, 12, August, 5, December, 8,—a total of 60 cases,—while the figures for the remaining months, September, 11, October, 5½, November, 20, give a total of 85. Further just where anopheles mosquitoes were most abundantly found fever was most prevalent. For example, bungalow No 5 was noted for fever and was popularly called "Fever Hall." In this bungalow during the months of September, October and November every servant was at least once attacked by ague. The

Europeans in the house escaped by the use of mosquito curtains. Moreover anopheles mosquitoes frequently found their way under the curtains, but before going to bed at night all were carefully caught. On one evening no less than six anopheles were caught in this manner. Anopheles were very numerous in this house and particularly in the "godowns" in which the servants lived.

Coincident with the decrease in malarial fevers there occurred a diminution in the number of both the breeding places and the adult insects of anopheles.

During December there is a drying up of all natural waters except in the river which alone in that month remained a source of anopheles larvæ. It may be remarked here that only two species of anopheles have been found so far in the station—Anopheles Rossii and Anopheles Fuliginosus.

If we now turn to the question of the destruction of anopheles we must bear in mind the conditions described above. The problem is a difficult one, but the principle which should underlie all such endeavours is essentially that of drainage. Every endeavour should be directed to the prevention of small collections of standing water.

1 We have in the river from the month of September, from bungalow No 20 to a point opposite the jail, a distance of about two miles, a number of pools of stagnant water overgrown with green weed and connected here and there by a narrow gently flowing stream.

2 We have certain nallahs, the one which almost surrounds bungalow No 5, and the one which passes at the back of the artillery lines.

3 Two or three places where from the want of a proper well constructed drain water collects for a time after the rains.

4 The excavations by the side of the road which have been made by the removal of the soil to bank up the edge of the roads.

All these sources of anopheles and this indirectly of fever could be to a great extent abolished.

Not much money would be expended in filling up the few pools that exist in the river with some of the stones that have in places accumulated in mounds in the river bed. A small regularly flowing channel could easily be constructed. The nallahs and drains are more difficult to deal with, but a little attention to the drainage of all pools in these would do much good. The excavations on the side of the roads should, if possible, be prohibited.

No doubt in the absence of constructive works for improving the surface drainage a thorough application of paraffin oil to the pools at short intervals would form, so long as continued, a check upon anopheles, such a procedure to be effective, however, must be very thoroughly prosecuted, and could not be carried out with-

out considerable expense. Moreover the outlay would have to be an annual one and would not in the end be the cheaper or better method of ridding the station of anopheles and so of fever.

AN ACCOUNT OF OPHTHALMIC COUNTRY PRACTICE IN RUSSIA

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Translated from the Centralblatt für praktische Augenheilkunde for November, 1900

By F. P. MAYNARD, F.R.C.S.,

MAJOR, I.M.B.,

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THANKS to the detailed reports of my esteemed teacher and chief, Professor Bellarmioff, to the Moscow International Medical Congress in 1897, and the reports which have already appeared in the German press, our colleagues in Western Europe are acquainted with the efficacy of the so-called flying or mobile columns of ophthalmic surgeons. This method of alleviating eye-diseases was, as is well known, organized by Professor Bellarmioff in 1893 on his seeing the want of ophthalmic surgeons in many parts of Russia. Although the asylum for the blind aims still chiefly at the development of stationary relief, and while it founds eye hospitals and aids many provincial surgeons with eye instruments and with pecuniary help hereafter, under different circumstances, and especially as a result of the necessity of the promptest aid in places where eye-diseases are far too widely disseminated, flying columns will be sent, and the number of them will grow not less but greater with each year.

I shall give an account in this short report of the facts concerning the efficacy of the ophthalmic column which was under my direction, as it seems to me an account of the eye-diseases and of the condition of ocular relief in some Russian districts can but be of interest.

The poorest districts in Russia requiring such relief are the Eastern Governments which are inhabited by numerous foreign races, such as Tatars, "Ischerwas," "Ischeremis, Wotjak" and others. By order of the Medical Department of the Minister of the Interior I took the blind-curatorium into one of these districts, into the Isaiapul circle of the Wjatka Government, as leader of the flying column. This consisted of the assistants from the Imperial Army Medical Academy, Surgeon-Majors Choizeff and Wassiljeff, final-year student M. Holmsten, a sister of mercy, three surgical assistants, and three or four hospital menial servants. As objectives of the column were chosen the town of Isaiapul (20,000 inhabitants), the village of Ischewsky Tawod

(with 40,000 inhabitants and a State gun-factory), and the village Wotkinsky Sawod (with 20,000 inhabitants) and a machinery factory. At each of these places the column worked about a month and had at its disposal space for 72 to 120 patients with the necessary hospital establishment. The work of the column lasted altogether three months.

The town of Isaiapul, the first objective, was in a district populated by Russians, it was surrounded by villages of Wotjaks—a changed race of Finns. This race, which lived in bad hygienic surroundings and rarely sought medical aid as a result of a low degree of development and ignorance, was much subject to eye-diseases, particularly trachoma.

The total number of patients of the column was 6,393, the number of visits paid them was 14,558.

By nationality they were divided as follows—

Russians	4,871	Tatars	60
Wotjaks	1,452	Others	10

According to occupation—

Peasants	3,882	Merchants	105
Small burghers and artisans	3,240	Others	60
Nobles	106		

Of the 6,393, 2,205 were men, 3,137 women, and 1,051 children. Seven hundred and four in-patients were treated, and they remained in hospital in all 5,655 days.

The diseases observed may be classified as follows—

1 Diseases of the conjunctiva and lids, of which 6,079, or 41 per cent, were registered (each eye separately). Among them must be noted, conjunctivitis and chronic blepharo-conjunctivitis, 1,062, acute trachoma, 66, chronic trachoma, 1,106, trachoma cicatricial, 1,476, trichiasis, 330, and entropion, 1,602.

2 Diseases of the cornea, 3,908, or 26.3 per cent, among them, pannus, 2,073, ulcer, 162, partial leukoma, 205, complete leukoma, 431, adherent leukoma, 293, and corneal staphyloma, 192.

3 Refraction and Accommodation anomalies, 2,330 or 16 per cent, among them myopia, 398, hypermetropia, 610, astigmatism, 128, and presbyopia, 994.

4 Diseases of the lachrymal passages, 591, or 4 per cent.

5 Diseases of the lens, 570, or 3.6 per cent, including mature senile cataracts, 188.

6 Diseases of the bulb, abnormalities of development, &c, 365, or 2.6 per cent, including atrophy of the bulb, 299, congenital micro- and anophthalmus, 20, sympathetic inflammation, 4.

7 Diseases of the uveal tract and glaucoma, 343, or 2.3 per cent, including disseminated choroiditis, 48, acute glaucoma, 1, chronic, 75, absolute, 155.

8 Diseases of the iris and ciliary body, 225, or 1.5 per cent.

9 Diseases of the optic nerve and retina, 222, or 14 per cent, including optic nerve atrophy, 142, chorio-retinitis, 16

10 Diseases of the motor apparatus, 192, or 12 per cent

11 Diseases of the sclerotic, 10, or 0.1 per cent

From this enumeration it will be seen that trachoma occupies a prominent position among the diseases of the Isarapul Circle. Trachoma in its most varied stages was met with in 2,305, or 36 per cent, of all patients of the column. The trachomatous patients were distributed among nationalities as follows—

Russians 1,070 or 22 per cent	{	In percentages of the total number of patients of those nationalities
Wotjaks 1,208 " 83 "		
Others 27 " 38 "		

The majority of these were treated for from a few weeks to two months. When possible, surgical treatment was employed, chiefly expression of the trachoma in recent cases, and operations on the lids in cases of entropion.

Out of the total 6,393 sick, 604 were registered by the column as blind in both eyes, of these 199 were curably, and 405 incurably, blind.

The distribution by sex was—

Curably blind	men 90,	women 89,	children 20
Incurably " "	161,	" 187,	" 57
Total	251,	" 276,	" 77

according to nationality—

Curably blind	Russians 166,	Wotjaks 29,	others 4
Incurably " "	299	" 100,	" 5
Total	465,	" 129,	" 9

The percentage of blind among the Russians in the column ambulance was 9.5 per cent of the total Russians. The proportion of curably to incurably blind was as 36.64. Diseases of the lens (cataract) took first place among the causes of curable blindness, accounting for 71.9 per cent, diseases of the cornea for 17.1 per cent, and of the iris 11.0 per cent. Various causes account for the incurable blindness: small-pox 25.9 per cent, and trachoma, 21.8 per cent, then follow glaucoma, 15.5, diseases of the retina and optic nerve, 12.4, keratitis, 6.7, diseases of the uveal tract, 4.0, cerebral diseases, 2.6, blenorrhoea of the new-born, injury, and developmental defects about 2.5, acute exanthems and operation failures about 1.6, acute general diseases, 1.0, and sympathetic ophthalmia, 0.3 per cent.

The proportion of Wotjaks to the total is, as in the case of the Russians, 9.0 per cent, the proportion of curably to incurably blind is slightly different and was 22.78. Cataract, as a cause of curable blindness, was only observed in 17 per cent, unlike the Russians, the chief cause being with them the results of trachoma (diseases of the cornea) in 70 per cent, diseases of the iris accounted for 16 per cent of the curably blind. Trachoma stood first as the cause of incurable blindness (67 per cent), far surpassing the re-

maining causes, then follow glaucoma, 9.9, small-pox, 6.9, diseases of the optic nerve and vascular mechanism of the eye about 3.9, blenorrhoea, 2.0, and acute exanthems, keratitis of various origin, brain diseases and developmental defects about 1 per cent.

When one compares the enormous percentage blinded from trachoma and its effects among the Wotjaks with the trifling number of cataract patients observed among them, it is no exaggeration to say that the Wotjaks become blind through trachoma at an age before cataracts, which is the usual cause of curable blindness in old age, can form.

The experiences gained by the column give us, however, even desperate as they are, no idea of the real state of the blindness among the inhabitants of the circle, for manifestly all the blind of the populace did not show themselves to the column. According to the statistics of the district administration there are among the Russian population of the Isarapul Circle 1,867 blind, or about 0.39 per cent, in proportion to the whole Russian population, while among the Wotjaks there are 1,143 blind, or 1.3 per cent, in proportion to the total number of Wotjaks in the circle.*

As regards the blindness affecting the representatives of other nationalities in the circle (Tartars, Tscherners, Basques, and Hebrews), the figures received do not make it right, considering the small numbers treated, to draw any decided conclusions as to the preponderance of this or that cause of blindness.

As regards the operative activity of the ophthalmic column there were in the three months 1,869 major and 1,152 minor operations performed.

I—OPERATIONS

Extraction of cataract	110	Plastic lid operations	2
Dissection	12	Lid operations after Snel	
Iridectomy & iridotomy	177	len	667
Excision of iris pro-		Lid operations after	
laps	1	Graefe	6
Abcission of staphy-		Lid operation after	
loma (Cricchetti)	5	Flarer	28
Pterygion	19	Lid operations after Kü-	
fatouing	151	bert†	3
Tenotomy	16	Lid operations after Ru-	
Muscle advancement	3	din‡	6
Enucleation and exen-		Transplantation of skin	
teration	7	and lid mucosa in tri-	
Extirpation of the la-		chiasis	164
crimal sac	3	Canthoplasty	472
Extirpation of the tum-		Symblepharon operation	1
ours	16		
			1,869

II—MINOR OPERATIONS

Expression of trachoma	635	Removal of hypertro-	
Splitting of canaliculus	470	phied mucosa in tra-	
Removal of foreign		choma	5
bodies	29	Opening of abscesses	14
			1,152

* In Prussia (1881) 8 in 10,000 inhabitants.

† Excision of the upper conjunctival sac with the tarsus in trachoma.

‡ Epherorrhaphy for Xerophthalmus.

The share taken in operating by the assistants in the colony was as follows: Dr. Choizeff performed 344 operations, Dr. Wassiljeff, 262, Student Holmsten, 304. Among voluntary workers with the column, 354 operations altogether were performed by local surgeons,—by Dr. Ignatjeff, 123, Dr. Spassky, 164, and Dr. Buranoff, 67.

As may be seen from the list, the majority of the operations were for entropium, *viz.*, 1,344 or 70 per cent, next come Snellen's operation (667), cantho-plasty (472), and next transplantation of skin and mucosa (164). As a result of the small size of the palpebral fissure in the Wotjaks entropium in them assumed terrible degrees. In almost every operation in them one had to begin with a canthoplasty to widen the palpebral fissure. Remarkable in proportion appears the number of operations for artificial pupils (177 or 9 per cent), for leukoma the result of small-pox and every possible kind of inflammation of the cornea. When possible tattooing was done for leukoma (157 or 8 per cent),* of extractions for cataract, which were few in proportion to the total number of patients, *viz.*, 110, or about 6 per cent. Only a few cases were among the Wotjaks, the majority of cataract operations were among the Russians.

Out of all the cataract operations an unfavourable result in the form of purulent inflammation was only observed in one patient, who also suffered from trachoma. Failures in lid operations and iridectomies occurred in a few cases, in the sense that for one or another reason the result expected was not attained.

The reader of these lines will probably be astonished at the enormous number of eye-diseases which were received by the column in so short a time as three months, as also at the colossal operative material that developed upon them. To complete all that the column did was only possible by the most strenuous efforts of all the workers in the column. Its working-day was from 12 to 16 hours and demanded an enormous union of physical and moral strength. No work in clinics or stationary hospitals can be compared with this work of the surgeons of flying columns.

The enormous number of patients and operations is to be explained, firstly, by the terrible dissemination of eye-diseases in that region, and secondly, by the relatively unsatisfactory organization of the local stationary ophthalmic assistance. The whole Isanapul Circle had about

3,30,000 inhabitants and ten district administrative surgeons and about five or six other surgeons. Although in Isanapul town there is a separate ophthalmic section in the town hospital with a surgeon at its head, who performs nearly 100 to 150 operations, and although some other surgeons perform simple eye operations, their help to the people is in vain, inasmuch as all these surgeons are overwhelmed with work in all specialities, and they are not in a position to occupy themselves especially with ophthalmology. Trust in medical aid is not yet great among the lower orders of the foreign population. There are many sick with entropium, blind from cataract, &c., who sit in their houses for years and never think of turning for surgical help, until they at last are admitted into an ambulatory ophthalmic column, whose personnel thanks to the high standing of the despatching authority—the blind-curatorium of the Empress Maria—enjoy everywhere a greater confidence than the local surgeons.

ON THE VALUE OF THE SERUMS OF THE RUSSEL VIPER AND THE COBRA, AS ANTIDOTES TO THE VENOMS OF THOSE SNAKES

By R. H. LILLIOT, M.D., F.R.C.S.,
CAPTAIN, I.M.S.

(Continued from page 84.)

TABLL C

Series of experiments in which a fatal dose of Dabona venom having been first administered, Dabona serum was subsequently exhibited subcutaneously, with a view to test the antidotal value of the latter.

The experiments were performed on 24th December 1899, on fowls.

	Hour	Wt in kilos	Dose per kilo	REMARKS
1	12 P.M.	77215	003 grm venom	Died in under 16 hours
	132 P.M.		2 c.c serum	
2	1252 P.M.	786	003 grm venom	Died in 36 hours
	129 P.M.		3 c.c serum	
3	15 P.M.	765	003 grm venom	Recovered
	135 P.M.		4 c.c serum	
4	17 P.M.	8075	003 grm venom	Recovered
	137 P.M.		5 c.c serum	
5	19 P.M.	8216	003 grm venom	Recovered
	145 P.M.		79 c.c serum	

N.B.—It is to be regretted that this series is uncontrolled, but the results are so consistent throughout that there can be but little doubt that decided protection was afforded by the serum.

TABLL D

A series of experiments in which a fatal dose of Dabona poison having been first administered, Dabona serum was subsequently exhibited subcutaneously, with a view to test the antidotal power of the serum.

* Tattooing was done according to the method which gives the best results in the clinic of Professor Bellarmino, *viz.*, with the needle of V. Wicker observing the important condition that the Indian ink is introduced into the tissue of the cornea by means of deep punctures and not into the epithelium as is done in other methods. The tattooing was done in most cases in one sitting and very often just after the iridectomy with a good quality of Chinese Indian ink. No unfavourable complications were ever observed, but always lasting results.

The experiments were performed on the 18th January 1900, the subjects chosen being fowls, and the venom being given a start of between 34 and 38 minutes in each case. The serum used was stained with blood pigment.

Hour	Wt of fowl in kilos	Dose per kilo	RESULTS
1 12 57 P M	1 006	0 004 grm venom	A control experiment, fowl found dead 16 hours after injection
2 10 P M	0 963	0 004 grm venom	Died in 9 days
1 74 P M		2 c c serum	
3 11 P M	0 907	0 044 grm venom	Died on 26th day
1 35 P M		3 c c serum	
4 12 P M	0 006	0 004 grm venom	Died on 21st day
1 35 P M		4 c c serum	
5 13 P M	1 020	0 004 grm venom	Died on 19th day
1 40 P M		5 c c serum	
6 14 P M	0 907	0 004 grm venom	Died in 25 hours
1 42 P M		6 c c serum	

TABLE E

Experiments designed to ascertain whether Cobia serum is an antidote to Cobia venom.

The venom was dissolved in freshly boiled cooled water at a strength of 001 grm per cc of water, it was mixed with the dose of serum, and injected into the flank of a rabbit.

Date Nov '99	Wt in kilos	Dose per kilo	REMARKS
1 26th	1 33934	0007 grm venom	Control, died in 13½ hours
2 26th	82214	0007 grm venom then improved, and 1 c c cobra serum	died on 14th day
3 26th	1 3807	0007 grm venom	Followed much the same course as the previous rabbit, died on 16th day
4 26th	85049	0007 grm venom	Followed course similar to above two rabbits, but died on 7th day
5 26th	1 47417	0007 grm venom	As above, died on 24th day
6 26th	1 07728	0007 grm venom	Was sick for only a day, is alive and well 25 days after injection
		4 c c serum	
		5 c c serum	

In the following two experiments, the serum was injected in one flank and followed one hour later by an injection of poison in the opposite flank —

Date Nov '99	Wt in kilos	Dose per kilo	REMARKS
7 26th	992234	4 c c serum	This rabbit was very sick for several days, then got better, and eventually died on 12th day
		0007 grm venom	
8 26th	850492	2 c c serum	Died in eight hours
		0007 grm venom	

The serum used in the experiments was freshly prepared, it was a clear straw colour.

TABLE I

Series of experiments on fowls designed to ascertain whether Cobia serum, exhibited previously to the administration of a lethal dose of Cobia venom, proves to have antidotal powers against the poison.

NOTE — The experiments were performed on March 4th, 1900. The serum was given about one and a half hours' start in each case, all injections were made into the subcutaneous tissue, care being taken that the venom was not injected into the same area as the serum.

Hour	Wt in kilos	Dose per kilo	RESULTS
1 2 37 P M	0 914	0 0025 grm venom	Died in 7 hours
2 1 6 P M	0 708	2 c c serum	
2 38 P M		0 0025 grm venom	Found dead 17 hours after the injection
3 1 9 P M	0 8146	3 c c serum	
2 42 P M		0 0025 grm venom	Recovered

The serum used for the above two experiments was a clean good sample, there was some blood stained serum also available, and this was used with the next two animals.

Hour	Wt in kilos	Dose per kilo	RESULTS
1 11 P M	0 793	4 c c serum	
2 44 P M		0 0025 grm venom	Died in 18 hours
1 16 P M	0 822	5 c c serum	
2 45 P M		0 0025 grm venom	Found dead in 17 hours

THREE CASES OF SNAKE-BITE TREATED WITH ANTIVENENE

By P H CHAPMAN,

CAPTAIN, I M S,

Civil Surgeon, Seoni, C P

The following cases seem worthy of record —

(1) Baka Ram, aged 18. This case was sent in from the Relief Camp at Amajhria. He arrived at hospital at about 9 30 A M.

History — He was said to have been bitten by a snake about 5 A M on the tip of the first finger of the left hand. Various incantations had first been tried, and then the Deputy Commissioner had sent him into hospital. No proper ligature had been applied.

State on arrival — There was no apparent mark at the spot at which he was said to have been bitten.

Patient was unconscious, but moved his limbs. Though he did not respond when roused. The pupils were widely dilated. There was profuse salivation. His abdomen and face had a bluish hue. His extremities were cold. Profuse perspiration over the head. Pulse 70, weak and thready. Respiration slow and laboured.

Treatment — The finger said to have been bitten was freely incised and bleeding promoted. The blood was of a peculiar cherry coloured hue also noticed in the last case and did not readily coagulate. 6 c c of antivenene were at once injected into the right flank.

The reason the whole dose was not injected was that the syringe did not act quite efficiently. This was followed after a short time by 10 c c more as the first dose produced no appreciable effect.

Course—The pulse remained fairly good for about twenty minutes after the second injection. When the breathing suddenly stopped and with it the pulse, I at once resorted to artificial respiration though the man was apparently dead. Somewhat to my surprise the pulse at once returned and became fairly strong. He made very feeble efforts at spontaneous respiration. He was kept alive for about forty minutes by artificial respiration, and the heart was stimulated with the battery. Then just as I began to entertain hopes of pulling him through, the circulation suddenly stopped. I opened the temporal artery with the idea of easing the left heart, and continued artificial respiration, but he never showed any further signs of life.

Case (2)—Mehi Lal was brought to the main dispensary, on 13th September 1900, at 12 midnight, said to be suffering from snake bite.

History—His wife stated that he had been sleeping during the day, and on her return in the evening, he intimated to her that he had been bitten by some animal, but that he could not speak properly.

The wife said he had been bitten on the second finger, but the man pointed to the ring finger of right hand. There was no mark apparent.

State on admission—Patient was semi-conscious replying to questions when roused. He felt pain in the throat and could not swallow anything. There was salivation. Pulse 120. Respiration 46. Passed urine involuntarily and complained much of thirst.

Treatment—Ten c.c. of antivenime were injected subcutaneously in the flank at once.

At 6.40 A.M., another 5 c.c. were injected as the site of the bite could not be properly localized, no local measures were adopted.

Course—The injections of antivenime seemed to have not the slightest effect. The patient went from bad to worse. He became completely unconscious. The pulse and breathing flagged. Salivation was profuse. He finally died at 11 A.M., 14th September, 1900.

Remarks—The case was attended to by Hospital Assistant Mahomed Habibulla, who has supplied me with the details. I came into the station on the morning of the 14th, and saw the man just before his death.

Case (3)—Shumsher Khan was brought to hospital, on the 7th October 1900, at about 4 P.M. He had been bitten on the dorsal aspect of the root of the great toe of the right foot where there was a small mark more like scratches than an incised wound.

He had been fairly efficiently ligatured, and as I met him on the road I supplemented this with a proper tourniquet. He had been bitten about one hour and a half previously. He said he had been bitten whilst walking through the grass. He could not identify the snake.

State on admission—He had practically no objective symptoms, except that he seemed thoroughly frightened. He said that on being bitten he turned giddy and could not recognize or hear any one and had a sense of choking in the throat and dimness of vision. There were two distinct marks on the dorsum of the foot, rather like scratches.

Treatment—The wounds were at once incised, and I also made incisions through the superficial tissues all round the marks. Thus, the wounds were washed with a solution of chloride of gold and bleeding encouraged. The blood had the above noticed, 10 c.c. of antivenime were injected in the flank. The man complained of giddiness, confusion of mind and stickiness of the mouth for some time, but he soon got all right, slept well at night and left hospital next morning. I drew some blood, and it was normal in colour.

Remarks on the above cases—In none of the above cases are the facts as clear as could be wished. In none of the cases could any distinct description of the snake be given. Certainly the commonest snake

about at the time was the Daboi, Russell's Viper. This is, I think, the snake above all others in which antivenime is supposed to have the least effect. Certainly in the first two cases recorded not the slightest benefit could be traced.

In the third case the patient really had so few symptoms that I am under the impression that he might well have recovered in any case, though, I think, the peculiar colour of the blood is a strong proof that he had been bitten by a poisonous snake.

A curious point in the first two cases was that no marks were to be found, yet I cannot put the symptoms down to anything but snake bite. In the first case about eight hours had elapsed, in the second case the time cannot be definitely stated, but it certainly amounted to a good number of hours.

NOTE ON THE PREVALENCE OF ANKYLOSTOMA DUODENALE IN THE DARBHANGA DISTRICT

(FOR THE I.M.G. COLLECTIVE INVESTIGATION)

By J. T. CALVERT M.B. (LOND.), D.P.H. (CAMB.),
MAJOR, I.M.S.

In the *Indian Medical Gazette* for October 1900, I published a brief note on the prevalence of *ascaris lumbricoides* in this district, and stated that it was intended to make a separate investigation regarding the presence of the *anchylostomum duodenale*. The following note gives the results of the first stage of that enquiry.

One stool of each prisoner newly admitted to the district jail was subjected to careful microscopical examination. For want of leisure repeated examinations could not be made, and for a similar reason the number of slides scrutinized did not exceed three. The ova of the *anchylostomum duodenale* were found in no less than 83 per cent of the first hundred cases examined, either alone, or associated with the ova of other parasites. The percentage of ova of other parasites present in this series was, of *ascaris lumbricoides* 39 per cent, of *trichocephalus dispar* 12 per cent, of *oxuris vermicularis* 9 per cent. Whilst in only 8 per cent were no parasite ova detected. It cannot be said with certainty in these cases that they were absent, for had the stools subsequently been repeatedly examined it is highly probable that in some at least the presence of ova would have been revealed.

The above figures agree very closely with those published by Captain Fearnside* as a result of his investigations at the Central Jail, Rajahmundry.

The state of health of these prisoners on admission to jail was as follows—

83 <i>Anchylostoma</i> , infested prisoners		17 non infested prisoners	
Good health	57.01 per cent		47.06 per cent
Indifferent health	39.76 "		29.41 "
Bad health	7.23 "		23.53 "
	100.00		100.00

* *Indian Medical Gazette*, 1900

The figures dealt with are small, but from the above such difference in health as there is, is in favour of the prisoners who harboured the parasite.

In regard to Captain Glen Liston's* theory that spongy gums are due to ankylostomiasis, the stools of several old prisoners who were suffering from spongy gums were examined, and the ova of this parasite found in all. On the other hand, the ova were in these cases present in no greater abundance than amongst other prisoners, whose gums were in a healthy condition. Again on examination of the stools of some of the jail warders who were suffering from spongy gums yielded negative results.

The ankylostomum was found to be equally prevalent amongst the general population attending the Municipal and Raj dispensaries amongst children as well as adults. The presence of this parasite does not make for health, and hence whenever possible it should be got rid of, but its almost universal prevalence shows that opportunities of re-infection must everywhere exist. Exactly how much sickness and mortality can be ascribed to it *per se* appears to be as yet impossible of determination.

It may be noted that in about 1 per cent of the cases examined—jail and dispensaries—various forms of ciliated infusoria were met with. Their significance was not evident.

A Mirror of Hospital Practice.

A CASE OF INTRACRANIAL NEURECTOMY OF THE FIFTH NERVE

By ROBERT BIRD M.D., F.R.C.S.,
CAPTAIN, I.M.S.,

Offg. Professor of Surgery, Medical College, Calcutta

NILRATAN PAL, of Bhatpara, Bankma, *æt* 35, was admitted for trigeminal neuralgia of the right side in August 1897.

History—About three years previous to admission he had recurrent attacks of toothache accompanied by pain on the right side of the mouth during mastication. He was under the treatment of a *kabiraj* for about six months without obtaining much relief.

The attacks gradually increased in frequency, and pain was felt over an increasing area, the right side of the face, ear, and head becoming involved.

After a time there were practically no intervals between the attacks which became violent exacerbations of a constant gnawing pain. For two years the patient lived on slops, as he found he could not "open his teeth" without bring-

ing on the pain. Speaking would bring on a paroxysm.

He sought advice in Calcutta, and two lower molars were extracted without relief.

There was no history of syphilis, epilepsy, and no family neurotic disease. The patient is a quiet, well-behaved countryman.

Present condition—The patient's aspect is one of suspense and anxious anticipation. The head is drawn slightly towards the right side. Suddenly without any warning the lips begin to twitch like a gibbering monkey, the angle of the mouth being drawn to the right side. The spasm quickly spreads to the right side of the face, and as it does so the patient places his right hand on the right side of his face and his left on his vertex. The spasm seizes the right sterno-mastoid and muscles of the right side of the neck so that the head is drawn by tetanic spasm downwards and to the right, the chin being turned to the left. The patient remains in this attitude moaning with pain for half a minute. The spasm suddenly leaves his neck, and he is able to straighten his head. The face and lips cease to twitch. He rubs the side of his face and neck with both hands and gives a sigh of relief. But he resumes his attitude of pained watchful expectancy waiting for the next attack to seize him. He complains of pain over the right side of the head, face and neck. The attacks recur about every three minutes. There is no sign of dental caries nor gingivitis. No pain on pressure over the exits of the trigeminal from its bony foramina on the face.

Eyes normal, ears normal, viscera normal. General nutrition very fair. Clinical examination distressed the patient very much by increasing the frequency of attacks.

The patient was treated medicinally with bromides, croton-chloral, gelsemium, but without benefit. He was ready to submit to any operation.

Operation was decided on, following the lines laid down by Hartley [*Annals of Surgery*, Vol. XVII, Jan—June].

Operation—The head was shaved and kept in an antiseptic dressing for two days. The patient being placed under chloroform, an omega shaped incision was made on the right side of the head (*vide photograph*), its base being from the frontal process to the commencement of the tragus of the right ear. Above the convexity extended to the supratemporal ridge. The structures, including the periosteum, were divided down to the bone at the first incision. The bone exposed by the incision was then carefully divided with a special gouge and mallet. An elevator was placed under the flap of bone at each end of the incision. Then by sheer force the flap of bone was fractured along the line of the base of the omega.

The flap of bone and with it the superjacent tissues which had been undisturbed was turned down. The dura mater was now exposed. Slowly and cautiously by digital pressure the dura mater was elevated from the middle fossa of the skull till the Gasserian ganglion was exposed. The result of this pressure was to compress the brain and displace cerebro spinal fluid

* *Indian Medical Gazette*, 1900

There was some respiratory difficulty at this time. Hemorrhage from general oozing was considerable, but was checked by sponge pressure. The three branches of the fifth nerve were then divided with a tenotome, and the ends of the superior and inferior maxillary branches pushed down into their own respective foramina. The ophthalmic division lying close to the sinus was left alone. The ganglion was then lacerated and cut, but owing to the excessive hemorrhage was not removed. As the sponges were gradually withdrawn, the brain reappeared in the wound pulsating normally. A horse hair drain was placed in the lower end of the wound, and the soft tissues of the flaps were sutured to the scalp.

The case did well. There was no return of pain and spasm. There was a rise of temperature accompanied by slight cerebral irritation on the second and third days which was treated with an ice cap and cold packing. The drain was taken out on the seventh day, and the patient was discharged about the end of the third week apparently well.

When discharged there was anæsthesia over the area supplied by the fifth nerve. With the mouth slightly open the lower jaw could be displaced to the right but not to the left owing to the paralysis of the right pterygoids. The eye gave no trouble. The patient presented himself for examination on 27th December 1898. He had enjoyed perfect health and immunity from pain since the operation. He masticated fairly well. It will be seen from the accompanying photographs that the right pterygoids were paralysed inasmuch as the lower molars of the left side could not be pushed external to their fellows of the upper jaw.

Captain F. O'Kinealy, I.M.S., was good enough to examine the condition of the eyes and give the following report—

OPHTHALMIC EXAMINATION

29th December 1899

RIGHT EYE—

Eyelids—Movements of both lids normal.

Cutaneous sensation diminished over the whole of the lower lid from the internal to the external canthus. Present in normal degree at both canthi, over whole of upper lid, and in superciliary region.

Conjunctiva, both ocular and palpebral, is normal in appearance, and presents no impairment of sensation. There is no lachrymation or epiphora.

Globe—Movements free in every direction. T.N. No pain, tenderness or photophobia.

Cornea—Clear and normally sensitive.

Anterior chamber normal in depth. Aqueous clear.

Iris normal in appearance and reacts naturally to light and accommodation. Pupil round, normal in size, no synechia.

V $\frac{2}{3}$ imperfectly Hm + 1 D $\frac{2}{3}$ clearly. Field of vision normal.

Ophthalmoscopically—Media clear throughout. Fundus normal.

LEFT EYE—

V $\frac{2}{3}$ imperfectly Hm + 1 D $\frac{2}{3}$ clearly. Normal in every other respect.

Remarks—There is little more to be said about the case, other than that there was presumably reunion of the divided ophthalmic nerve. Return of sensation has been noticed in

other cases (*vide* article quoted *supra*). The hæmorrhage was the most difficult factor to be dealt with in the operation. It is noteworthy that there were no trophic changes in the eye, which was carefully protected after operation.

When last seen of a short time ago, the man was in perfect health. Since the operation he has been under the observation of Assistant-Surgeon Debendra Nath Hazra, House Surgeon, Medical College Hospital.

SURGICAL CASES FROM THE SAMBHU NATH PANDIT HOSPITAL, BHOWANIPUR, CALCUTTA

By E. HAROLD BROWN, M.D.,

MAJOR, I.M.S.,

Civil Surgeon, 24 Pergunnahs

The following cases have been operated upon in the Sambhu Nath Pandit Hospital, Calcutta, during the past year—

CASE I—Pyosalpinx. Laparotomy. A Japanese woman, aged 24, was admitted on the 23rd of January, 1900, with a swelling at the lower part of the abdomen.

It was extremely difficult to obtain the history of the case, as the patient spoke very little English and scarcely any Hindustani, but, as far as could be made out, the illness commenced about six months previously when, her general health being good, the patient was seized with a rigor, followed by fever which lasted for about a fortnight. With the fever there was a sharp pain in the lower part of the left side of the abdomen which persisted after the subsidence of the fever, accompanying it was a swelling which slowly increased, and this is now very painful and tender, preventing the patient from walking about, and rendering her a confirmed invalid. She denies having had gonorrhœa at any time, but the statement must be accepted with reservation as the woman is a prostitute, and the probability is that gonorrhœa was the starting point of the disease.

Menstruation has been in abeyance for some months, after being scanty for nearly a year, there is no vaginal discharge at present, but there are numerous warts on the labia minora.

The abdomen is prominent, tympanitic above, dull below and in the iliac fossæ, it is painful and tender, especially from the umbilicus downwards, on the left side, where there is a hard, extremely painful swelling, it is somewhat elastic and deep fluctuation can be elicited.

On the right side there is a smaller mass, harder and more irregular than the former, and much less tender, both masses appear to be continuous, with the uterus, so that the pelvis is occupied by a swelling that almost entirely fills it.

P.V. the cervix points downwards and is fixed, it is rather large and low, on each side of the uterus is a large mass, that on the left being elastic and fluctuating, extending from the side of the organ and being closely connected with it. On the right is a hard mass, irregular and resistant, the appendages cannot be felt, being evidently incorporated with the swelling, there is less tenderness on this side than on the left.

Diagnosis—Pyosalpinx on the left, chronic inflammation of the appendages on the right, resulting in plastic exudation and matting together of all the structures concerned.

The patient was informed that an operation would be necessary, but she would not consent at first, she

A CASE OF INTRACRANIAL NEURECTOMY OF THE FIFTH NERVE

BY CAPT ROBERT BIRD, M D, F R C S, I M S



was kept in the hospital, and it was found that she had fever daily, the temperature varying between 100° and 102.6° . This continued for more than a week, and she lost flesh considerably in that time, while the pain grew worse. I daily advised her to submit to operation, and, on the 1st of February, she consented, so preparations were made to operate on the following day.

The abdomen having been cleansed on the afternoon of the 1st and kept clean all night, and further purified on the table on the morning of the 2nd, Hospital Assistant Janaki Nath Das proceeded to administer chloroform. I was assisted by my Resident Surgeon, Babu Nripendra Nath Bose, whose help was invaluable.

The abdomen was opened by a two and a half inch incision in the middle line, from a point an inch below the umbilicus, downwards, on opening the peritoneum and passing in two fingers to ascertain the condition of the parts, it was found that the uterus was entirely surrounded by the swellings on each side, on the left side the mass was globular, elastic and fluctuating, it was intimately adherent above, to the left, and below, to bowel, the connection being firm. On the right side was a hard, irregular mass also firmly connected with intestine, but it was impossible to make out tube or ovary, and there was no elastic or fluctuating spot discoverable.

My assistant steadied the swelling and, having packed sponges carefully around on all sides, I plunged a medium size trocar into the most prominent part on the left side, about half a pint of thin, greenish, foul smelling pus escaping. As the cyst collapsed, I picked up a fold of its anterior wall with forceps and made a free incision into it, giving exit to more than ten ounces of pus, and, the cavity being now empty, I endeavoured to detach the sides from their connection with the intestine. The adhesions were found to be so intimate, however, that I saw it was useless to persist in my attempts to remove the sac, so decided to put in a tube and drain it.

The parts being mopped clean with a sponge (irrigation was not necessary), I proceeded to stitch the walls of the sac to the edges of the incision in the abdominal wall, and then introduced a large drainage tube to the depths of the cavity, the wound was then dusted with iodoform and was dressed with salicylic wool kept in place with a binder.

The subsequent course of the case was satisfactory, though slow, the patient bore the operation well, and had very little pain afterwards. There was a rise of temperature for a few days, the maximum being 102° , the discharge was profuse at first, but gradually lessened in amount, the patient being practically well within a month, except for the existence of a small sinus which discharged a glairy fluid for a few weeks, and then healed completely.

The patient was kept under observation till the 1st of June when she was perfectly well, the swelling in the right side of the pelvis having disappeared, she reported herself at the hospital in the middle of September looking plump and well, having put on flesh considerably, and a linear cicatrix was all that remained to mark the former site of disease.

CASE II—Ovarian Cystoma. Ovariectomy. The patient, a thin, weakly woman, aged 30 years, was admitted into hospital on the 27th of April, with an abdominal swelling. She said she first noticed it about eighteen months ago, as a small swelling on the left side, it increased slowly and painlessly at first but, for the last two months, had enlarged rapidly and, a month ago, her feet began to swell. Menstruation had been absent for nine months, and, for six months before its arrest, had been irregular. Has had three children.

Present condition.—The patient is thin and weak, the abdomen is greatly distended, there is a fluid

thrill obtainable all over which appears to be superficial to the tumour. On dipping the fingers downwards, this fluid is felt to be displaced before the hard mass below is reached. On percussion and palpation the tumor is found to be chiefly in the left side of the abdomen, extending across into the right and reaching a point near the ensiform cartilage. P V the uterus is found to be pushed down and to the right, the cervix being visible on separating the lips of the vagina, the body of the uterus is small and quite unconnected with the tumour.

Diagnosis.—An ovarian cyst, left sided, with free peritoneal fluid in the abdominal cavity.

The patient has oedema of the feet and legs, and the urine contains albumin in appreciable quantity.

It was not a very promising case, the free fluid in the peritoneal cavity, the oedema of the feet and legs and the albuminuria increasing the gravity of the case, the heart, however, was healthy, and, though the patient was thin and weak, I concluded that she would have a very good chance of life if subjected to ovariectomy. She gladly gave her consent to the operation, and, with the same assistants, I operated on the 30th of April, the skin of the abdomen having been cleaned in the usual way.

Making a two and a half inch incision, I rapidly reached the peritoneum, on opening which there was a gush of straw coloured fluid, amounting to several pints. Having evacuated the fluid from the peritoneal cavity, I plunged a Spencer Well's trocar into the cyst, my assistant steadying the latter, and a thick dark fluid escaped freely into the pail below, the size of the tumour diminishing by more than a half, and it was evident that the largest loculus had been tapped. I then put the trocar into two other parts of the tumour in succession, removing a considerable amount of fluid from each, and it was then apparent that the remainder of the mass was solid, the incision was enlarged upwards to the extent of an inch. I introduced my hand and found there were no adhesions, and, with a little coaxing, the mass was delivered. The pedicle was long and thick, I transfixed it and tied it with thick silk, employing the Staffordshire knot, and the tumour was cut off above the ligature.

The right appendages were found to be atrophied.

Some of the thick fluid having escaped into the peritoneal cavity, while the second and third loculi were being tapped, I employed irrigation of the cavity with warm boracic lotion.

The wound was stitched with silk worm gut, passing through all the structures from peritoneum to skin, a dressing of iodoform and sublimate wool was adjusted, and a many-tailed binder applied.

The patient did very well afterwards, the highest temperature recorded was 101° on the evening of the second day, and there was no fever after the fourth day. The abdomen remained flat throughout, the bowels were moved on the fourth day, the dressings were changed on the sixth, and the wound was found healed, the stitches were removed on the twelfth day, and the patient was allowed to sit up that afternoon. She was permitted to get up on the nineteenth day, and, being very anxious to return to her home, was discharged on the twenty first day.

The solid part of the tumour weighed seven pounds, and the fluid from the cyst measured eleven pints.

CASE III—Empyema of the Gall Bladder. Cholecystotomy.

On the 16th of August, a salt peon, aged 22, was admitted to Hospital for "Hepatitis," the note on the man's ticket being "complaints of a good deal of pain and tenderness in the hepatic region, temperature 102.6° ."

The history given by the patient was that he had been suffering a good deal from fever for some weeks, like many of the other peons in his depart-

ment Four or five days ago he was seized with a severe pain in the region of the liver it was very sudden, and he could not account for it. He tried various native medicines, but without relief, so came to the hospital on the 16th, where he was seen and admitted by the hospital assistant.

The next morning, on examining him I discovered very slight enlargement of the liver downwards, with marked tenderness along the lower margin, especially at a spot in the nipple line, there was no bulging, inspiration caused pain at the same spot, no redness or oedema of the skin.

Spleen, heart and lungs healthy, no jaundice, no history of a previous attack, temperature 102° , bowels costive, dark coloured motions.

Hot fomentations to the part, with an aperient saline mixture containing chloride of ammonium were ordered.

On the following morning the temperature was 101.2° , the pain and tenderness continued, the skin was dry, and the tongue was slightly dry. On the 18th the temperature was normal, but the pain and tenderness were if anything, worse, and the patient looked ill, careful examination, which was difficult on account of the tenderness showed the existence of a definite swelling below the ribs in the nipple line, but it was impossible to define its limits, in a few days I was able to make a thorough examination and was then able to make out a globular swelling in the region of the gall bladder, it was fluctuating and very tender, inspiration and coughing both produced pain, there was not general enlargement of the liver, jaundice was absent, so the common bile duct was patent and the gall bladder, whose duct was evidently blocked, was distended probably with pus.

I explained the state of things to the patient and recommended an operation, but he would not consent for some days, as he grew worse, however, there being a rise of temperature every evening, with night sweats, loss of flesh and dryness of the tongue, I advised him not to delay any longer in the hope of cure by other means, and he eventually gave his consent on the 5th and preparations were made to operate on the following morning.

Assisted by my Resident Surgeon, Babu Bhagobati Chitran Chowdhry, chloroform being administered by the Hospital Assistant, I made an incision over the region of the gall bladder, from the costal margin downwards to the extent of two inches, the tissues were divided and, all hæmorrhage having been checked, the peritoneum was picked up and opened to the entire extent of the wound. The gall bladder was found greatly distended, but deep, and, owing to its having contracted adhesions posteriorly and on each side, it was impossible to bring it forward into the wound. I accordingly packed sponges all round, so as to shut off the peritoneal cavity, and, standing the viscera, I plunged a small trocar into it giving exit to nearly an ounce of thick pus. This caused partial collapse of the walls, and seizing the anterior surface with forceps, I made a free incision which allowed over an ounce of pus to escape. I then passed my index finger into the gall bladder, as far as it would go, but could not detect a stone, but a director, introduced its entire length, struck one which must have been at or near the junction of the cystic with the hepatic duct. It being still impossible to draw the collapsed gall bladder up between the lips of the wound, on account of the adhesions it had contracted, I again passed my finger inside, and seizing one wall between my finger and thumb, gently and steadily separated the adhesions first on that side, and then on the other, until I was able to bring the edges of the fundus between the lips of the wound, to which I united them with silk sutures, after thoroughly mopping the parts around.

As the gall stone was so deep I considered it advisable not to attempt to remove it, hoping it would be dislodged

by the flow of bile there being now no pressure in the gall bladder. I accordingly passed in a drainage tube and dressed the wound as usual.

After history of the case—There was a slight discharge of pus for the first eight days, and, on the ninth morning, a sudden rush of bile in such large quantity that the dressings had to be changed several times a day for a week, then the discharge of bile began to lessen, so that the patient needed dressing only once a day, and finally a fistula remained, which discharged a very bil-stained muco purulent fluid. The patient was discharged with the fistula healed, and his health greatly improved, on the 5th of November, just two months after the operation.

The gall stone was not recovered, it either slipped into the common duct and was carried into the bowel, or was washed out on to the dressing by the first rush of bile, and was missed.

The next five cases were operations for appendicitis, an affection which is very common among the natives of India, though often overlooked. Two of them were not seen until very late in the disease, when the patients were very weak and low, and the subjects of large collections of pus, both of these terminated fatally. The other three had also advanced to the stage of suppuration, but were seen earlier, and made excellent recoveries. All the cases occurred in men. I have, however, once had the opportunity of operating on a native woman for this disease, and though in this district, the operation was performed out of the hospital.

CASE IV—Appendicitis. Laparotomy, death. The patient was a young man, a fireman on board a trading steamer. He was admitted into hospital in January, for fever and pain in the region of the liver, with constipation. His condition was bad on admission, as he had been ill for a long time, the history showing a succession of bronchitis, rheumatism, fever and colic. He had been in hospital a few days, and was better, the temperature having fallen to the normal point when on the morning of the 30th he began to complain of colicky pains in the abdomen, a careful examination detected a distinct fulness in the right iliac region, with great tenderness, and at the time, there was no fever. I diagnosed appendicitis, but resolved to wait, as there were no urgent symptoms. On the following morning, however, the temperature had risen two degrees, he had vomited once, the pain was very severe, there was fulness of the iliac region perceptible to the hand, and the pulse was much quicker than could be accounted for by the temperature. I accordingly advised immediate operation, but the patient would not give his consent, so nothing further could be done. His food supplies were cut down both liquid and solid, a little hot water was allowed to relieve thirst, and belladonna was the chief drug administered.

His condition grew progressively worse, the temperature rose, and remained above the normal point, the pulse became weak as well as frequent, hiccups set in, and the patient was evidently very ill. However he refused to consent to the operation, until the morning of the 3rd, when his condition was very bad, but I determined to give him a chance, so had him prepared for operation at once.

I made the usual incision in the abdominal wall, downwards and inwards, ending above and outside the centre of Poupart's ligament, external to the deep epigastric artery. The centre of the incision crossed, about an inch and a half from the anterior superior iliac spine, an imaginary line drawn from the umbilicus to the latter process, and it was two and a half inches long.

(To be continued)

THE
Indian Medical Gazette

APRIL, 1901

THE NEW CONSTITUTION OF THE B M A
AND THE SERVICE MEMBERS

THOSE of our readers who are interested in the amending of the constitution of the British Medical Association will have read for themselves the provisional Report of the Constitutional Committee which appeared in the Journal of the Association on 16th February. As the new constitution of the Association will, to some extent, affect the interests of the numerous members who are either in the Medical Services or reside in India and the tropics, it is necessary to say something on the matter.

The main points in the new scheme are as follows—(1) That each member of the Association should belong to one division or "primary unit," so that "each member of a unit should have a reasonable opportunity of attending every important meeting of the division," (2) that divisions be combined to form groups or branches, (3) that for India and the Colonies primary units or divisions be also formed, or if existing branches remain undivided they shall be counted as divisions.

The Council of the Association is to be constituted as follows—The President and President-Elect of the Association, the Vice-Presidents and Treasurer *ex-officio*, and one representative from every branch of 200 members (with an additional representative for every 400 members over that number), and one representative each from the Medical Service of the Royal Navy, the Royal Army Medical Corps and the Indian Medical Service. The novelty, however, of the new constitution remains, this is that, as it is obviously impossible that an executive body could be formed if each division had a representative (*i.e.*, over 500), it is proposed that each division should elect a member to be called a "delegate," and each delegate should attend a special annual meeting of delegates, and that all resolutions passed by the meeting of delegates, by a two-thirds majority, should be binding on the Council, except when the Council feel that the question in dispute is not in accordance with the general feeling of

the members, then the Council is given the power of the referendum, that is, that it may refer the question again to the divisions for a further expression of opinion. The quorum of the delegate meeting to be 200.

How then will this new constitution, if finally agreed upon, affect the interests of the members of the Association who are resident in India or the Colonies? The first and most obvious point is that a very large number of these members do not belong to any branch, but are unattached members of the Association. In India we are aware of only a few branches, *viz.*, the South India, the Bombay, the Deccan and the Burma Branches. In the vast region from North Assam to Calcutta, and from Calcutta to Peshawar, we know of no branch of the Association, though there reside in that area many hundred members. The policy of the new constitution framers is obviously to try to have every member of the Association also a member of one local branch. This may easily be possible in England, but is by no means so easy in a country like India, where qualified medical men are few and far between. If, however, the rule is insisted upon it will become necessary for all of us who wish to remain members to join a local society, and in many places local "divisions" of the Association will have to be established. We are certainly of opinion that, where possible, local divisions should be formed, but as the local Association would usually embrace a whole Province, it is clear that it would even then be difficult for each member "to have a reasonable opportunity of attending all the important meetings," which has been laid down as a *raison d'être* for each division. Distances are great and journeys expensive in India, so that a local branch started, say, at Calcutta or Lahore, would usually have attending it few more than the members actually residing in those cities. The membership of the others, and the majority, would to a large extent be nominal only.

We are glad to find that it is proposed to allow each of His Majesty's Medical Services to each send a representative to the Council. The names of retired Medical Officers to whom the interests of each Service could well be trusted will occur to every reader. Another point is worth mentioning is that in future it is proposed to raise the subscription to 25s per

annum instead of a guinea. The extra four shillings, however, is to be returned by the parent Association to each Branch in the form of a capitation grant, so that for those who are already members of a branch there will be no change in the amount of the subscription.

We understand that a Special Committee is to meet to decide in what way India and the Colonies are to be divided for the purpose of making each member belong to a branch. When we consider that this is the land of transfers and that members, especially those in military employ, are frequently liable to transfer from one Province to another, it is clear that the local division system will not work so smoothly in India as at home, and it would be worth while considering whether it would not be best, as it is simpler to exempt members who belong to the services, or are settled in India or the Colonies from the operation of this rule.

We invite the opinions of members of the British Medical Association on these points. The weak point in the proposed constitution is the presumption that the average member is interested in so-called "medical politics." If there was no weekly *B M Journal*, how many members would remain?

AFRICAN AND INDIAN MALARIA COMPARED

A PERUSAL of the Reports of the Malaria Committee of the Royal Society will convince any one that there must be a very considerable difference between malaria as seen in West Africa and that in India. We refer especially to the question of the infection in the natives of both countries. In India as we all know, and as the million attendances at our dispensaries and hospitals testify, malarial fever is a very common disease among the natives of all ages and all parts of the country. In West Africa, and according to Koch in German East Africa, on the other hand, the question of the immunity of the adult native is one on which recent writers have had much to say. It is clear that no one could claim the native adult of, say, the Bundwan or Rungpur districts as immune to malaria. It may be that a certain amount of immunity exists in the inhabitants of the *terai*, but this at most amounts to an ability to live in places where newcomers would

probably quickly succumb. No such immunity, however, can be claimed for the inhabitants of the ordinary districts in the plains of India. If we look at the recent report of Dr J W W Stephens and Mr Christophers to the Royal Society, we find much mention of an immunity among adults, so much so that (*Third Report*, p 23) they define malarial fever as "a contagious disease contracted (through the medium of the mosquito) from the native *child*," and again they write, "the adult native possesses an *entire immunity* against malaria, and although living under the same conditions as the children, and constantly subjected to the bites of infected anopheles, yet examination of his blood shows that parasites are always absent. It is true that the immunity is not absolute, for occasionally we meet with severe fatal cases among adults, but speaking generally there can be no doubt of the *real immunity enjoyed by the adult native*."

It must be understood, however, that in speaking of malaria in children, these investigators mean only "the presence of parasites, the children are perfectly well, and present none of the characteristic signs observed in Europeans affected with malaria." In fact in the reports we find nothing about the clinical symptoms of malaria in natives, nor anything of their attendance on hospitals in places where such institutions exist. Nor are we informed of any native mortality attributed to malaria. We hear of nothing comparable, for example, to that wave of malarial fever which swept over the Punjab last autumn.

In fact it would seem from these reports that there are only two conditions of infection in natives of Africa to be considered, *viz*, "a condition of infection in young children without febrile disturbance, and a condition of active immunity in the adult," this being acquired as the result of infection during the first ten years of childhood. Now sufficient blood examinations of natives of India have been made to show, and we are all aware from the clinical facts daily protruded upon us, that no such immunity exists for the adult native of India.*

How then has this immunity to the malarial fevers in the native of Africa been brought about? The only theory which seems to explain these differences between the native of India and the native of Africa is that used by

* In this respect India resembles Italy. Colli has only met a couple of persons in Italy immune to malaria.

Dr Archdall Reid in his most suggestive book "*The Present Evolution of Man*" Dr Reid has laid down that the present evolution of man is an evolution against disease, and that in proportion as a race has ancestrally suffered from a disease, the more resistant is the present generation. If we apply this theory to Africa, it would imply that in former times the native of Africa must have been decimated by the malarial fevers and, as a consequence, by the survival of the fittest (*i.e.*, the most resistant), a race has grown up which is resistant to the infection to a very considerable degree. Moreover, this will also explain the infection of the native children, for as in biology a trait which appears late in the ontogeny corresponds to a trait which appears late in the phylogeny, so the power of resisting the parasites of malarial fever must have appeared late in the African races, so, therefore, this power of resistance will appear late in the individual, and hence children (and, we may add, Europeans from other climes,) are still liable to attack.

If, therefore, there are any grounds for this hypothesis, we must presume that in the ordinary districts of India malaria can never have been the intense and severe disease it must (*ex hypothesi*) have been in Africa, hence from a less severe racial experience a lesser resistance has been acquired, and at the present day in India malarial fevers are extremely common at all ages.

The time has surely come for a complete investigation of the malarial fevers of India. We could mention several investigators at present in India who are well competent to undertake such work. The whole aspect of the problems of malaria has been changed by recent researches, and in view of the enormous mortality attributed to malaria in India, we certainly think that the question demands a thorough investigation.

LONDON LETTER.

THE QUEEN'S DEATH.

NEVER probably, in the world's history, has there been such a grand manifestation of sorrow for the death of any human being, as has occurred throughout the British Empire on the occasion of the demise of the sovereign who for nearly 64 years reigned over it. The nation's grief was simply overwhelming, and every other

interest and event shrank into insignificance in the presence of the great fact that Queen VICTORIA was no more. The vast majority of the living population of the Empire has come into existence since the Queen ascended the throne and her name and personality had seemed to have become an inalienable representative of the rule of these realms and its colonies and dependencies, and a precious possession of each of her subjects, this apart from the wisdom of her governance, the purity of her life, the nobility of her character, the quickness of her sympathy with all that was good and great, and her fellow-feeling with suffering and distress—her unspeakable humanity and womanliness. It was, therefore, a rude awakening to know and realize that the end had come and that the kingdom and every soul who acknowledged her sway had sustained an irreparable loss. Still there is consolation in the reflection that the great history and example, the forces making for progress and good will remain as a real influence and will continue to operate in the same direction for love, so that the life of the dead Queen, though ended as far as her body is concerned, has through its merits and deeds earned for herself immortality and for Great and Greater Britain abiding and increasing prosperity. The cause of the monarch's death appears from the particulars of her fatal illness which have been published to have been mainly senile changes in the cerebral arteries, and the final brain failure, there is reason to believe was determined and accelerated by anxieties and sorrows of a national and domestic kind, which gave rise to that most wearing factor of nervous collapse, worry and consequent insomnia. The prevailing feeling in this country and no doubt throughout the Empire is that it was good to have had her so long.

THE QUEEN AND THE MEDICAL PROFESSION

THE Queen was scrupulously loyal to the medical profession and accounted those members of it who ministered to her as her friend. There was no toying with irregular systems or practitioners in that quarter, and the confidence placed by the sovereign in her medical attendants was reciprocated by tender, assiduous and skilful care to which the prolongation of her precious life was no doubt in large measure due. The names of Clark, Laycock, Jenner, Reid, Powell and Barlow are conspicuous among her doctors, and they were worthy of the honour and trust

implied in the offices which they held. Of medical progress during Her Majesty's reign the accounts which have been written of the achievements of the nineteenth century give ample testimony, for almost every improvement or discovery or reform in medical science which the century had produced, took place during the Victorian Era, and the advancement of Joseph Lister to the Peerage will always rank as a conspicuous event of the Queen's reign by which the hall-mark of Royal recognition was impressed upon zeal and success in the study of the healing art.

THE ROYAL COMMISSION OF SOUTH AFRICAN HOSPITALS

THE Commission which was appointed for the purpose of investigating and reporting on the treatment of the sick and wounded in South Africa has practically exonerated the Army Medical Service from the aspersions which were cast upon it by Mr. Burdett Coutts and others. It found that "taking it all in all, in no campaign have the sick and wounded been so well looked after as in this." At the same time errors of administration and hardships arising from the exigencies of military operations are admitted, and suggestions are offered with a view to placing the Royal Army Medical Corps on a more efficient footing. The chief of these concern the constitution of the Corps which is admittedly undermanned and overworked. A sufficient strength of officers and men is the first desideratum and an intelligent system of selection and training of both the second. The conditions of service must be made more attractive especially in respect of pay, leave and foreign service. The shortcomings of the corps arise mostly from inadequate numbers and the Director-General is acquitted from blame in the matter, for it is quite certain that he represented the position and its causes to the War Office before the South African trouble arose and made such large demands on his department. It is wonderful how well, by issuing nominations and entertaining civil surgeons, he has met the emergency, but radical measures are needed to place the corps on a footing of efficiency and restore its popularity. The increased employment of nurses in field hospitals and the appointment of sanitary officers are recommended by the Commission and the use of improved ambulance wagons and tents. The question of

entrusting the corps with the functions of supply and transport is also raised. These and other questions should, the Commission consider, be referred to a departmental or other committee of experts. While, therefore, it is clear from this report that the R. A. M. C. and the auxiliary medical agencies which have worked in South Africa have done well, it is also evident that changes and reforms are impending in this as in other departments of the army in order to remedy the shortcomings which active service has revealed and to attain a higher plane of efficiency.

THE NATIONALIZATION OF CHILDREN

UNDER this title Mr. Jonathan Hutchinson discusses in the January number of the *Poly-clinic* the duty of the State as regards the rising generation. "Is it right, is it fair, is it politic," he asks, "that the State should continue to insist that the whole burden of providing for children should be thrown upon their parents?" The State has already enacted by law that education, which used to be considered as much a parental duty as nurture and clothing, shall be provided—nay compulsorily insisted on—in the case of all who are not able to supply it. Why should not the same principle of co-operation be adopted for the purpose of supplying other things which are necessary for the raising of a strong stock and the maintenance of a robust race? The example of Sparta is quoted, but the motive and manner of Spartan customs, as regards children, are hardly applicable to the circumstances of England in the twentieth century. No doubt a large amount of benevolent and useful work is being done by various agencies in rescuing the young from poverty and vice and training children who would otherwise remain puny and ignorant, and had to earn a useful and honourable livelihood and become respectable and creditable members of society. These efforts are charitable, but Mr. Hutchinson would go further and throw the burden of the support as well as the education of children on unmarried and childless as well as on the married. There is much to say for this view, and by way of making a practical commencement, Mr. Hutchinson proposed that every child attending a board school should get a good dinner at the public expense. For many children one good meal a day would mean much, and the cost of it would not add materially to the burden of the rates.

THE POLYCLINIC

I HAVE already in previous letters drawn attention to the advantages offered by this excellent institution. The second festival dinner is to be held on the 22nd May the Right Hon'ble Arthur J Balfour, M.P., LL.D., in the chair. In view of this function, which, it is hoped, will replenish the coffers of the college, circulars have been issued explaining the objects and methods of the institution. The privileges of membership, which can be attained by payment of an annual subscription of one guinea or a single payment of twenty guineas, are summarised as follows —

"1 The use of the Library, Reading Room, and Museum

"2 Admission to the Afternoon Consultations, Clinical Demonstrations, and Special Courses of Lectures.

"(Qualified Practitioners only)

"3 Permission to utilize the Laboratory for purposes of Private Research, on payment of a small fee

"4 A copy, delivered post-free every month, of the College Journal

"5 Facilities for attendance at Hospitals associated with the Polyclinic.

"(Qualified Practitioners only)

"6 Opportunity for having Clinical Investigations — Microscopical, Bacteriological, Chemical, &c.—made, and reports given, at a nominal cost, on sputum, blood, urine, or any form of morbid tissue submitted for examination

"7 The right to recommend patients for gratuitous consultation-advice

"8 The title to Vote at all the General Meetings"

In fact the Polyclinic is a sort of scientific club which is capable of affording medical officers on furlough from India valuable opportunities of study and instruction

K McL

7th February, 1901

Current Topics.

TEXTILE PLANTS AND MALARIA

OUR readers in Bengal may remember that in the Report of the Sanitary Commissioner for Bengal for 1898 the question was discussed (see *Indian Medical Gazette*, December 1899, p 467),

of the possible influence of the practice in certain districts of jute steeping on the health of the inhabitants. We notice in Celli's recent book a discussion on the same subject as applied to the flax and hemp districts of Italy, which may be here quoted —

"The maceration of these plants is carried out in various ways, but generally as follows. If the subsoil water be very superficial a trench is dug to collect it, and the plants to be macerated are placed in it. If there be a stream or streams on the land, the water is diverted from its bed and collected in basins, where the plants are placed to macerate. The vegetable putrefaction which develops separates the textile fibres.

In both cases, however, it is doubtful whether this maceration constitutes an environment, *per se*, favourable to the development of the malarial mosquito and consequently of malaria. We have said that these mosquitoes, unlike the *Culex*, do not by choice deposit their eggs in putrid waters, and we may now add that the larvae soon die in the waters in which these plants are macerated. Nevertheless, this agricultural operation, when watercourses are employed, may produce stagnant pools favourable to the life of the specific mosquitoes, even beyond the site where the maceration is carried on, and *vice versa* when it is performed in large tanks of masonry, and especially if these tanks be constructed in such a manner that the water is constantly running, very probably the specific mosquitoes will not develop in them. The question, however, requires further study. It is certain that in some regions they practice this maceration without the development of malaria, as it is also certain that while the macerating waters are favourable to the development of the *Culex* larvae, they are, on the contrary, as we have said, the grave of the *Anopheles*. Therefore the dread which they inspire as foci of this disease is also the result of the prejudice that has so long prevailed in the medical schools, regarding the decomposing swamps as being the cause of disease, and especially of malaria."

The question is worth working out from this point of view in those districts of Eastern Bengal, where the cultivation of jute is an important industry

THE GELATINE TREATMENT OF ANEURISM

REFERENCE having been made to us to supplement a note on the use of gelatine hypodermically for the treatment of aneurism, we have collected the following references to it in current literature

This method of treatment is a new one, only having been introduced in 1897 by Lancereaux and Paulesco (see reference in Allbutt's *System*, Vol 6, p 433) —

"The original experiment consisted in the injection into the tibial vein of a dog weighing 15 kilogrammes of 80 to 400 cubic centimetres of a warm 5 per cent solution of gelatine, proving that the substance traversed the kidney and passed in the urine, which presented the appearance of transparent jelly, so that the containing vessel could be inverted without the contents being spilled. At the same time, blood obtained from the vessels coagulated instantaneously, the true clot being formed in ten seconds instead of three minutes, and this at a temperature of 37°C. Jellification of the serum following when the temperature fell."

Since these experiments were published, many cases have been recorded of the successful treat-

ment of aortic and abdominal aneurism, one of the most recent cases quoted being that shown at a recent meeting of the Medical Graduates' College, London, where Dr Guthrie Rankin exhibited a case. In the *Gazzetta Degli Ospedali* of Milan, for January 1900, Geraldini reports very favourably on the method.

"After establishing, by careful experimental research on six dogs, that the gelatine was completely absorbed, and that it actually did promote the coagulation of the blood, he has successfully applied this method of treatment to four cases of aneurism of the aorta. There were no inconveniences from its use, except transient smarting, and he recommends it in high terms as absolutely harmless and a valuable measure in the relief of these unfortunates. He insists that the patient must remain in bed during all the time of the injections and for a while afterward, to allow the quiet formation of a clot in the sac. The formula is one or two grams each of gelatine and sodium chloride to 100 grams of distilled water. The solution is heated to 37°C and 10 to 20 cc are injected daily. The solution should be made fresh every two or three days, and, with a sterile solution, there is not the slightest general reaction nor disturbance of any kind. The injection should be followed by prolonged massage of the spot. The subjective disturbances gradually diminish and disappear and the aneurysmal sac grows smaller and harder."

On the other hand, at the recent International Congress of Medicine, Golubinin, of Moscow, said that he had employed the method in eight cases, the number of the injections varied, according to the case, from two to fifteen. Of the eight patients four died in a short time, and the other four were lost sight of, but while under observation no special effect was noticed. Golubinin inclines to the view that the method is useful as an aid to other forms, but insists on the necessity of a non-meat diet, an absolute milk diet being the best for such cases.

In a recent issue of an excellent periodical (*Treatment*, January 1901) a resumé of some of the recent literature is given. Huchard and Klemperei succeeded by the same means in arresting long-continued and abundant hæmoptysis in cases of tubercle of the lung. Bauermeister has used a 10 per cent solution of gelatine in serum, administered hot, in teaspoonful doses every fifteen minutes for hæmorrhage due to ulcer of the stomach, with complete success in all cases except one, which, however, was rapidly cured by a subcutaneous injection. Paliakow, of Moscow, has had a similar experience, using 200 cc of a 10 per cent solution by the mouth, three times a day for four weeks.

Gelatine has also been used in cases of metrorrhagia by the application of tampons of gelatinized solution. Subcutaneous injections of gelatinized saline solution have also been found efficacious in cases of purpura hæmorrhagica, and even in cases of febrile affections attended with hæmorrhage into the skin, and from the gums and digestive tract. It is also said to have succeeded in a case of chronic dysentery. Gelatine has also been used in arresting hæmorrhage from leechbites, from

ruptured varix, from piles and neoplasms, and also as a local hæmostatic in wounds where no large vessel has been divided, but the attempt to produce a dry wound by injecting gelatine, before an operation was only partially successful, and the advantage gained was more than lost by the subsequent hæmorrhage.

The hæmostatic effect of gelatine is attributed to its action on the leucocytes, which are in part destroyed so that the fibrin ferments are liberated. Gelatine is said to be harmful in cases of nephritis, as it leads to the occlusion of the tubes, and it is suggested that it is the deleterious agent in beef-tea and soup, which are hurtful in kidney disease.

INDIAN COWS' MILK

THE following conclusions as to the composition of the milk of Indian cows are published in *Agricultural Ledger*, No 19, of 1900, being the results of a large series of analyses by Dr J W Leather, Assistant Agricultural Chemist to the Government of India —

"The milk of the Indian cow corresponds to that of the English one, and that the proportions of Proteids, Lactose, and Mineral matter is approximately as 9 13 2.

In the case of the buffalo milk the relationship is different, that of Proteids being distinctly higher, that of Lactose lower, than in cows' milk.

"Generally, it may be said that —

- "(a) the milk of the Indian cow contains a high proportion of butter-fat, varying from 4 up to 6 per cent, buffaloes' milk contains usually much more, varying from 5 or 6 per cent up to as much as 10 per cent,
- "(b) the percentage of Proteids (Albumen and Casein) usually varies in cows' milk from 3.1 up to 3.5, in buffaloes' milk from 3.5 up to 4.3. The buffalo, Nevasi, was exceptional. Such proportions as 5.0 and 5.2 per cent of Proteids as stated in the Madras publication referred to, are never found,
- "(c) the percentage of milk-sugar (Lactose) in the cows' milk varies from 4.4 to 5.0, and in buffaloes' milk it is present in about the same proportion. It is never so low as is stated in the Madras publication,
- "(d) the percentage of Mineral matter in cows' and buffaloes' milk varies from about 7 to 8 as it does in English cows' milk.

PSOROSPERMOSIS

THE interesting preliminary note published in this issue by Captain J W Cornwall, I M S, the Health Officer of Madras, makes reference to the article on Psorospermiosis by Dr J Griffiths, in

Allbutt's System (Vol II, p 1003) He regards psoriasis as a local disease which under suitable circumstances may become general and spread throughout the tissues of the body It has been met with as Darier's skin disease and Paget's eczema of nipple, also in the mucosa of the intestinal canal and in the liver Only a few cases of general psoriasis have been recorded, the symptoms being pains in the limbs, headache, drowsiness or delirium, nausea, dry tongue, albumin in the urine, and a remittent kind of fever, lasting from two to seven weeks In our Current Literature column (October 1900, p 408) Captain L Rogers, I M S., has quoted an account of a somewhat similar blood infection which is said to be common in China

CHRISTY'S MOSQUITOES AND MALARIA

WE have received a copy of the second edition of Dr Cuthbert Christy's admirable little book on "Mosquitoes and Malaria," the first edition of which we had the pleasure of reviewing some months ago (*Indian Medical Gazette*, September 1900, p 371) The new edition does not purport to be more than a revised reprint of that published at Bombay The publication of the little book was *felix opportunitate*, and the immediate demand for it led the firm of Sampson, Low, Marston and Co., London, to offer to bring out the book Its low price and the excellent way in which recent periodical literature on mosquito malaria is collected in it must render the book popular We understand that Dr Christy contemplates, in time, the production of a larger and more complete volume on this subject Meanwhile the little book is one to be strongly recommended to all interested in malaria

MORE NOTES ON MOSQUITOES.

IN addition to the notes already published on mosquitoes in India we have received an interesting note from Captain S P James, M B, I M S., at present in China He writes that mosquitoes are prevalent all the year round in Travancore, and especially from September to November Anopheles, too, are found throughout the year but in great numbers in October and November These remarks apply also to the larvae and pupae as well The most usual places to find anopheles larvae are pools of water in cultivated fields and on newly-turned soil, water in the furrows between potato ridges, in small tanks, rice fields, and in fact in Travancore in almost every kind of pool Pools containing fish and minnows often have also anopheles larvae One enemy of the anopheles is the dragon fly larva Captain James next gives us some information as to anopheles in China In Hongkong, at the end of September, when he was there, mosquitoes and among them anopheles were very common

He found anopheles larvae in pools on the marshy soil of the mainland opposite Hongkong (Kowloon) It was a species he had not observed in India In North China at Shankaikwan, he found culex larvae late in October, but none of the adult flies (culex fatigans), the weather was then very cold, but on one occasion he found culex larvae in a pool to have survived a night's frost with ice on the surface of the pool

WE call attention to the two letters in this issue on the question of phthisis in Gurkhas, raised by Captain Lill's paper in our February issue We invite the opinions of medical officers on this subject We are inclined to the view that there is no special racial proclivity to this disease, but that its prevalence among Gurkha sepoy is due to want of ventilation and air space in their huts, and to their disregard of the necessity of pure air It is said that phthisis is more common among the married Gurkhas

THE *Polyclinic* (February 1901) contains an interesting note on experiences with urotropine, to which we referred some time ago (*Indian Medical Gazette*, November 1900, p 449) There is no doubt that it is an effective urine-sterilizer, and of great use in chronic inflammatory and suppurative affections of the pelvis of the kidneys, the ureters, and the bladders Mr Reginald Harrison usually gives it in doses of from 7 to 10 grains, in chloroform water, or in cachets three or four times a day Messrs Allen and Hanbury, who supply it in a pure form (and, be it noted, many spurious forms are in the market), state that it is not compatible with acids or acid salts It is precipitated by tannin, and therefore should not be prescribed with astringent vegetable infusions or tinctures It is a drug which should have an extended sphere of use in stone cases

THE recent success of Major C E Sunder, I M S., and his staff at Gya in making popular inoculation against plague is having a good effect on public opinion outside that district, as is shown by an unanimous opinion of the Municipal Commissioners of Bhagalpur in favour of arrangements being made for voluntary inoculation in case the disease should break out in the town of Bhagalpur

IT is also satisfactory to see that Lieutenant-Colonel Sweeny, I M S., and the authorities of Benares have, so far, been successful in carrying the people with them in their efforts to stamp out plague in that important and populous city

IN Bombay City from 1st October 1897 to 30th January 1901, over 200,000 persons have been inoculated against plague

INFLUENZA has been unusually prevalent in February and March in many districts of Bengal

WE publish in this issue some more of the interesting observations on mosquitoes and malaria now being carried on by Major Andrew Buchanan, I M S, at Nagpur, C P. He has enlisted several of the convicts in the jail there to aid him, and several Burman convicts have become adepts at finding the parasite in the blood, and can use even an oil immersion lens. One Burman convict is quite an expert, and is quite well up in all that is described by Manson and Celli.

This being so, there is no reason why the Indian medical student should not become equally competent to make examinations of malarial blood, and we hope that in a year or so numerous students will pass out who will be thoroughly competent to use the microscope. Every civil hospital assistant should be taught this.

THE valuable paper on typhoid in natives by Captain Lamb, I M S, should go far to settle the question of the occurrence of this disease in the natives of India.

IN reply to queries on the subject we may state that the indigenous drugs, now official in the Addendum to the B P, are obtainable from the Chemical and Pharmaceutical Works, 91, Upper Circular Road, Calcutta, or Messrs Kemp & Co, Bombay. Doubtless other well-known firms are equally reliable.

IT is proposed to raise a memorial to the late Dr Archibald H Jacob, of Dublin, in testimony of his life-long work in the interests of the medical profession in Ireland.

THE *Lancet* correspondent from India (16th February, 1901) evidently does not agree with Major E H Brown, I M S, as to the diagnosis of those cases in the Calcutta emigration depôts, which Major Brown has shown to be cerebro spinal fever. The *Lancet* correspondent clings to the idea that they were plague. We think the detailed account of the cases published in our January issue is the best proof of the correctness of Major Brown's diagnosis.

WE have received a copy of *Man*, a monthly record of anthropological science, published under the direction of the Anthropological Institute of Great Britain and Ireland. It contains a number of interesting papers and reviews, and is to be commended to the notice of all interested in anthropology.

WE understand that Captain L. Rogers, I M S, has recently been engaged in an inquiry into the unhealthiness of the Bogra District, alleged to be due to the silting up of the river Karatoja, and that he has obtained strong evidence in favour of the value of the spleen test as an index of the "malariousity" of the district.

IT is stated that reinoculation after six months and disinfection of houses has been effectual in staying the plague in many parts of the Jullunder District.

SINCE the opening of the Pasteur Institute in August 1900 no less than 173 patients have been treated for rabies. These are made up of 15 British officers, 45 British soldiers, one Native officer and 9 men, 27 European Civilians, 73 natives and three soldiers' children.

This is an excellent record of good work.

THE *Journal of the American Medical Association* comments (2nd February 1901) on the increase in the spread of the cocaine habit among the negroes of the Southern United States.

Convictions for selling cocaine without a license is not an uncommon item in the police news in the Calcutta papers, and probably points to a spread of the habit in that city.

THE death is announced on 10th February of Max von Pettenkofer, the veteran hygienist and pioneer of hygiene in Germany. The *British Medical Journal* published a note on Pettenkofer's death by the great English veteran of hygiene, Sir John Simon.

CERTAIN letters have recently appeared in the *British Medical Journal* pointing out the value of perchloride of iron in post-malarial anæmic conditions. Every hospital assistant in India uses this remedy in the form of "iron and arsenic mixture."

OUR readers will have read in the lay newspapers the lectures delivered by Major C E Yate, I S C, on the question of first aid teaching in India. There is no doubt but that there is room in India for a vast extension of the St John's Ambulance Association. In Bengal Civil Surgeons have been directed to form classes in all stations, and to give lectures to the local police. It is a movement for which we wish every success.

MR. H H RISLEY, I C S, has been asked to collect subscriptions for a memorial which it is proposed to raise to celebrate the 80th birthday on 13th October next of that grand old man of medicine Rudolf Virchow. We are requested to state that subscriptions should be sent direct

to Consul-General E Von Mendelssohn-Bartholdy, Jagerstrasse, 49 50, Berlin

WE invite the views and opinions of surgeons in India on the best method of operating on scrotal tumours. The article by Major Charles in our last issue described his method, a comparison of that operation with those performed in other parts of India would be most useful

LIEUTENANT-COLONEL W K HATCH, I.M.S., F.R.C.S., writes us to suggest that a hæmostatic forceps would be a valuable addition to the dressings carried by the soldier. Many a life now lost from hæmorrhage might be saved by this simple means

Reviews

A Manual of Personal Hygiene—By WALTER L PYLE, A.M., M.D. W B Saunders & Co., Philadelphia. Price \$2

BESIDES Dr Pyle six well-known members of the medical profession have contributed to this useful and interesting manual. The book is not one for students, nor is it really absolutely necessary to anyone, nevertheless it will repay perusal. Its object, as set forth in the preface, is to describe "plainly the best means of developing and maintaining physiological and mental vigor." That the book may be generally useful and "understood of the people" outside the medical profession, "purely technical phraseology has been avoided, as far as compatible with the scientific value of the text." The manual contains numerous diagrams and illustrations which help very forcibly to fix the teaching conveyed. This is notably the case where the contributors deal with the harm done by tight-lacing and by badly made boots. It would, indeed, seem as though the majority of boot-makers, protected by careless parents, were of opinion that there is something radically wrong with the natural foot. It is quite impossible to account on any other theory for the skill with which they make the foot to fit the boot instead of making the boot to fit the foot. It should be laid down as a rule from which there must be no departure that children's boots should be made to order. Parents and guardians will find some equally wise remarks concerning the harm done by garters which the authors very rightly condemn. The indictment against corsets and tight-lacing is severe, but well deserved. "For the correct performance of function on the part of the stomach, liver, and intestines, it is necessary that free and properly related movements of these organs should take place." Such movements are impossible in the

large majority of women. Again corsets are shown to interfere with respiration, lessening the amount of air taken into the lungs. There is a general and popular belief that women breathe with the chest and thus naturally differ in their method of respiration from men, who use the diaphragm and so-called abdominal breathing. There can be no doubt, as Dr Howard Fox points out, that this belief is founded upon the very evil which it is part of the object of this manual to remove. Let any advocate for corsets watch the breathing of women who have never worn stays. They breathe naturally with the diaphragm as men do. Dr Fox says with regard to singing: "No skilled singing teacher would ever consent to allow his pupils to sing when handicapped by a tightly-laced waist, but would insist upon their breathing to their utmost capacity. This can only be accomplished when both chest and abdomen are free and unhampered."

The disturbed condition of the abdominal contents produced by the pressure of tight stays is known by the fearful and wonderful name of *enteroptosis*. The hygiene of the teeth as described by Dr Charles G Stockton will repay study, and many will be surprised to learn that breathing through the mouth, instead of through the nose, as we should do, is responsible for certain peculiarities in the arrangement of the teeth. The upper incisor teeth may come to project some distance beyond the line of the lower incisors. The effect on the personal appearance is by no means pleasing, and as the teeth are not properly opposed, they tend to grow in an irregular manner and become functionally useless. Another conclusion to which a consideration of the hygiene of the teeth brings us is that the tooth-brush is the dentist's greatest enemy. The teeth should always be cleaned after a meal. The care of the nose, ear, eyes, and throat is dealt with in a way which brings conviction to the reader. This manual should be in the hands of every intelligent head of a household. Outside the care of his own body, a matter of the greatest importance, as the bread winner, the father will be able to guide his children along routes, pleasant in themselves and conducive to a healthy and vigorous manhood.

Atlas and Epitome of Gynecology—By DR. OSKAR SCHAEFFER. Authorized translation from the Second Revised and Enlarged German Edition. Edited by Richard C Norris. With 207 Coloured Illustrations on 90 Plates and 62 Illustrations in the text. Publishers W B Saunders & Co., Philadelphia, 1900. Price \$3 50.

THE first edition of this Atlas was published about five years ago. In the present edition has been added new illustrative material from autopsies and operations as well as from the living. There are 34 new water-colour illustrations and eight new woodcuts.

The value of this excellent Atlas to the medical student and the general practitioner will be found not only in the concise explanatory text, but especially in the illustrations. The large number of illustrations and coloured plates, reproducing the appearance of flesh specimens, will give the student an accurate mental picture and a knowledge of the pathological changes of the pelvic organs that cannot be obtained from mere descriptions. Next to the study of specimens, which are not available outside of large gynæcological hospitals, well-chosen illustrations must be utilized. The Atlas serves that purpose admirably. Its translation and publication in the English language have placed the English-speaking profession under deep obligation to the translator and publishers.

The text is concise and covers the subject systematically and with sufficient detail to give the reader a comprehensive knowledge of gynæcological disorders. Dr Norris, the Editor of the American edition, has inserted occasional comments in order to harmonize or point out the difference between the author's teaching and that generally approved in America.

We have nothing but praise for this handsome, elegant, and artistic Atlas, which should be in the hands of every student and practitioner. The price is within the reach of all.

Hygiene and Public Health—By LOUIS PARKES AND HENRY KNEWOOD. London, 1901. H. K. Lewis. Price 12s.

THIS volume, which now appears under the names of the two writers above-mentioned, may be regarded as the sixth edition of the well-known manual of hygiene by Dr Louis Parkes. The new volume is, however, much altered and improved, and being practically recast has every claim to be regarded as a new work.

In no work of the same size that we know is there such a mass of information well arranged and clearly stated as in the present volume. In many respects it is the best of the smaller books on hygiene. It is designed not only for candidates for the diploma of Public Health, but also as a handy guide to the profession generally on topics connected with sanitation. It is in the latter respect that we consider it fulfils a real want. It has no pretensions of being a handbook for the Public Health Laboratory; it being wisely considered that several excellent laboratory handbooks are already in the market. Those familiar with the earlier editions of Dr Louis Parkes' Hygiene will notice many improvements and additions, which show that it has kept in close touch with the great changes and progress in hygiene. There will be found an excellent résumé of the question of the biological methods of sewage disposal, and the following advice is worth quoting for India, where too, often

it is only possible to hand over the superintendence of these biological filter-beds to the care of a very inferior and often ill-educated agency. "What is essential in the working of natural process is for the superintendent of the works to fully appreciate that he has countless colonies of living working units under his control. Their work must always be regulated according to their powers, and sufficient and periodical intervals of rest must be allowed them between the regular periods of work. Then, and then only, will they attain their powers to the work they are called upon to perform, and so maintain that equilibrium which is so easy to maintain and so difficult to regain when once lost." It is the difficulty of obtaining this skilled supervision which makes us think that at present the method is not applicable in ordinary cantonments or municipalities in India.

The other sections of this book are equally well up-to-date, and on the whole we have no hesitation in strongly recommending this volume on hygiene most favourably to the attention of our readers.

The Syphilis of Children in Every-Day Practice—By GEORGE CARPENTER, M.D. London, Baillière, Tindall and Cox, 1901. Pp 112, with 12 Plates and other Illustrations. Price 3s. 6d.

THIS is the fourth *brochure* of the Medical Monograph series, the avowed object of which is to sketch in a brief compass the chief features of ordinary medical and surgical subjects of general practice.

On seeing this book on my table a friend said "What is the need of such a book?" Well, there is no particular need for one-half of the books that are published every year. Had the question been "What is the good of such a book?" then the answer could have been much more satisfactory. If it merely enables an observer to condense and crystallise his experience, it does good to him if to no one else. For reading maketh a full man, conference a ready man, and writing an exact man, as Bacon has told us.

But in this instance, I think, any medical practitioner or student will derive benefit, if not instruction, from this little work.

In short, pithy sentences the author comes directly to the point without any circumlocution. In explanation of the well-known fact that a mother may be immune to infection from the mucous patches in the mouth of her suckling infant, Dr Carpenter quotes Lingard's experiment, in which a foetus *in utero* of a pregnant rabbit was inoculated with anthrax. The foetus died of anthrax, but the mother remained immune even to later inoculations. This is supposed to be due to the placenta resisting the passage of germs, while it allows of antitoxin passing from the foetus to the mother. After

giving a good description of the various syphilodermata the author passes on to show the different lesions in glands, organs, and epiphysis and bones. Dr Carpenter emphasizes the fact that the temporary teeth do not usually show any changes characteristic of the dyscrasia, and that there is no special delay in the eruption of the milk-teeth as alleged by some observers.

He goes further and states that the typical test teeth of Hutchinson in the permanent set are present only in a minority of cases of hereditary syphilis. Post-nasal adenoids, he says, often follow chronic snuffles in syphilitic children, condyloma about the anus is rare in the first few months of life, being commonest between the first and third years, hydrocele is one of the commonest complications in syphilitic infants, and the cord, vas, epididymis, and testis are all liable to specific changes. While iritis, on the contrary, is a rare manifestation in infancy. The illustrations are fairly good and have the merit of being original.

Medical Jurisprudence and Toxicology.—

By FRED J. SMITH, M.A., M.D., OXON. J. and A. Churchill, London. Price 7s 6d.

GIVEN a moderate literary ability there is probably no one so fitted to write a book on any subject connected with the study of medicine as one who has, by years of familiarity, as a lecturer, made himself a master of his craft. Many, however, having the knowledge lack the ability to arrange it in book-form. There is no doubt in this case. Dr Smith has both the knowledge and the power of imparting it to others. His style is precise, and his book is a mass of facts well arranged. Indeed this work should be used by students as a note-book since there is nothing in it they can afford to leave out. For the student who merely wishes to pass an examination in medical jurisprudence it will be sufficient, and the general practitioner who is not often troubled with medico-legal matters will find it an useful book to have in the revolving book case near his study table. When this is said, we must admit that the book will not satisfy the wants of a police surgeon or of any medical man closely connected with jails and courts of justice. However, for experts there are plenty of larger works, works which like that of Casper are most interesting reading quite apart from their value as channels through which a full knowledge of Medical Jurisprudence may be obtained. We are a little surprised to notice that Dr Smith does not give any detailed instruction as to the performing of *post-mortem* examinations in medico-legal cases. The student, of course, receives some general instruction in the class of practical pathology, but *post-mortem* examinations upon which the life of an accused may depend require care and attention to details which may be neglected when

we are only confirming a diagnosis, or as is not unfrequently the case (forgive the paradox)—making one! Dr Smith does, however, insist on one point of the greatest importance in connection with this first step in medico-legal instruction. How often in this country do we find an assistant-surgeon or even a Civil Surgeon recording the statement that the body was so decomposed or mutilated that nothing could be gathered from the appearances presented. To such an one we repeat Dr Smith's words — "Never refuse to do a *post-mortem* on the grounds that it is too late, wounds can be distinguished for a long time from decomposition changes, and a uterus (the last organ to decay) may give some very vital information." To this we may add that injuries to bones will not be affected by decomposition, and that such injuries, together with deformities or peculiarities of teeth, jaws, &c., may be detected so long as any portion of the skeleton remains. Certain poisons, too, may be detected after years of burial. This work is of course written for European students and would require certain modifications to make it a work on all points sufficient for Indian students. The weights of the various organs are greater in European races than in natives of India, and certain accidents rare in England are unfortunately common in India. Of these perhaps the most important is rupture of the spleen. In its normal conditions the spleen is well protected by the ribs, but in the East, where constant attacks of malaria render enlargement of the spleen only too common, the exposed and enlarged portion of that organ is very liable to be ruptured even when the force applied is not very great. Dr Smith's book, good as it is, is not likely therefore to interfere with the usefulness and popularity of works written specially for the Indian student such as those of Norman Chevers and Lyon.

A Manual of Medicine—Vol II Edited by W. H. ALLCHIN, M.D., F.R.C.P. London, Macmillan & Co., 1900.

THE volumes of this work are aptly defined by the term "manual." They really are handy volumes and not the ponderous tomes that only too frequently masquerade under this designation. They are nicely bound and printed, as might be expected of this famous publishing house. In this second part the discussion of General Diseases is continued under four headings, viz —

- (a) Diseases caused by Parasites
- (b) Diseases determined by Poisons introduced into the body
- (c) Primary Perversions of General Nutrition
- (d) Diseases of the Blood

The section on parasites, by Drs Cantlie and Shore, is rather stereotyped in character, and

the illustrations are mostly familiar, being reproductions from Leuckart, Cobbold, &c. Then definition of the term "parasite" as applied to man is so framed as to include fleas and mosquitoes. The section on diseases determined by poisons has Dis Poore and Allechin for its authors, and refers to food-poisoning, alcohol, opium, metallic poisons, noxious gases, and snake venom. The third section is a long and comprehensive one, and is largely contributed to by the editor, Dr Allechin. It deals with the primary perversions of nutrition, and includes auto-genetic poisons, retrogressive changes, progressive changes, hypertrophy and inflammation, malignant growths, diseases connected with ductless glands, and lastly a heterogeneous group of clinical entities, comprising obesity, diabetes, insipidus and mellitus, gout, rheumatoid arthritis, chronic rheumatism, myalgia, rickets, acromegaly, osteitis deformans, and mollities ossium.

The last section treats of the blood and its diseases. It is up-to-date and well arranged. It comprises two parts, in the first of which Dr Louis Jenner gives a concise description of the normal blood, its characters, development, and methods of clinical examination. In the latter part Dr Sidney Coupland describes the diseases of the blood under the subdivisions of the anæmic and hæmorrhagic groups. There are two good coloured plates of various blood conditions.

Clinical Examination of the Urine and Urinary Diagnosis—By J. BIRGEY OGDEN, M.D., Instructor in Chemistry, Harvard University Medical School, &c. Illustrated Philadelphia: W. B. Saunders & Co., 1900. Pp. 416.

THIS is a clinical guide to urinary diagnosis and presents, in the words of its author, in a concise manner the chemistry of the urine and its relation to physiological processes, the most approved working methods, quantitative and qualitative, and the diagnosis of diseases and disturbances of the kidney and urinary passages. It is in the application of the information furnished by chemical and microscopic examination to the diagnosis of disease that the especial value of the book lies, and the author is to be congratulated on his success in realizing his ideal. The work is divided into two parts, the first describing the methods, and the second the application of their results to urinary diagnosis. The former is as excellent as the latter, and includes very clear accounts of all the tests which have been found practically useful. It is almost needless to remark of a work emanating from Harvard University in the year 1900 that it is thoroughly up-to-date, and the latest tests and methods are included and their value duly estimated. Part II appeals most to the general practitioner and is both valuable and interesting. The condition of the urine in diseases of the kidneys, then in diseases of the urinary tract below the kidney proper,

and finally the urine in diseases outside of the urinary tract are discussed in successive chapters. In malaria we notice that albumen is said to be usually present, though generally, in small amount. Thayer found it in 46.6 per cent of his cases and Major W. J. Buchanan, at Bhagulpur, we believe, in five per cent of his. Albumen is said to be invariably present in cerebro-spinal meningitis, and a chemical (apart from a bacteriological) examination of the urine to be of assistance in diagnosing the disease from enteric fever. In enteric the urine is high coloured, strongly acid, has slightly diminished chlorine, and much diminished phosphates; in meningitis it is normal or pale coloured, faintly acid, neutral or alkaline, and the chlorine is much diminished or absent, while the phosphates are much increased. The book abounds in helpful information of this kind and can be strongly recommended to practitioners who have urine analysis to do. It is illustrated by eleven excellent plates and fifty-three engravings, and is published in the handsome manner we have come to associate with the name of Saunders of Philadelphia.

Current Literature.

PATHOLOGY AND BACTERIOLOGY

The Native as the Prime Agent in the Malarial Infection of Europeans.—By S. R. Christophers and J. N. W. Stephens. Further reports to the Malaria Committee of the Royal Society. This report contains the results of work at Accra in West Africa, and is of great interest at the present time, as well as a useful guide to workers in India on the same lines. The first section deals with breeding places in their relation to native dwellings, in which the distribution of the anopheles larvæ is dealt with, the observations having been made in the dry season and in a place which has a considerable area, which has no place, which lodge water, even after heavy rain, while in other parts there is marshy ground, so that it was peculiarly suitable for the inquiry. The larvæ were most prevalent in sheltered pools, which are thick with suspended matter, and such pools nearly always contained anopheles larvæ independently of proximity to human dwellings, but they are rare in sandy districts. Favourable pits are usually found round native dwellings, having been dug when the huts were built or for catching water, but they only persist where the ground water level is high, namely, from six to ten feet from the surface, and consequently steadily decreased during the dry season until at the end of April, the number of pools available for anopheles in the whole district did not exceed a dozen. They were still, however, found in some deep wells. Around the borders of lagoons, on the other hand, they persisted owing to the constant high water level.

The second section deals with anopheles in native dwellings. When the breeding places have recently disappeared the number of anopheles does not undergo any perceptible diminution for some weeks. They are most easily found in houses at dawn, or on the outside of mosquito curtains at the same time. They may still be present in small numbers although difficult to find, long after all near breeding pools have dried up, and will rapidly infect newly formed pools within a few days of rain falling, such as from four to seven. Examples

are given from villages under different conditions, which show that the anopheles not only exist in large numbers where breeding grounds are present but also for even several months in places where there have been no breeding grounds within that period, and they give reason for believing that they may fly to a distance of from $\frac{1}{4}$ to $\frac{1}{2}$ a mile. In the rainy season a spread of the anoph-les certainly takes place.

Thirdly, malarial infection in native dwellings is treated of, the number of children, who show evidence of infection on a microscopical examination of their blood in differently circumstanced places being given. The percentage of such infections was found to vary between sixty and seventy in different villages, even when the number of anopheles found was very different so that the conclusion is arrived at that the amount of infection in native children does not appear to bear any very different definite relationship to the actual number of anopheles present, which only shows the complexity of the problem. There was one striking exception to this, namely that one portion of Accra, in which there were no breeding places even after heavy rain, in which the percentage of children infected was only thirty one.

Babies showed the greatest proportion of infections, children up to eight years a large number up to twelve fewer, while there over that age were rarely affected. These children appeared to be healthy even when marked numbers of the ring shaped parasites were present, and it is thought that immunity may thus be acquired in childhood. In native dwellings about five to ten per cent of the anopheles caught in houses were infected, even in the dry season, with rare exceptions, and it is suggested that children with a mild infection may serve as a medium for from which the mosquitoes may carry a severe form of the disease to Europeans, who being unprotected may suffer severely.

Lastly, the segregation of Europeans is treated of, and it is shown that whenever their houses are near those of natives infection by malaria is very liable to occur, while this disease was found to be much rarer in certain European houses, which were situated at a distance from the native portion of the town, their salubrity being well known, and in this way easily accounted for. Sleeping for a single night in a native hut, especially without a mosquito curtain, is said to be nearly always followed by malaria, and examples within the experience of the writers are given. The removal of the native European quarter from the neighbourhood of native houses is, therefore, advocated, or what would amount to the same thing, in Calcutta, for instance the removal of native quarters from the midst of the European quarter. This paper is worthy of careful study by Europeans resident in India.

Die "Kala-Azar" in Der Vorderindischen Provinz, Assam—Eine tropen pathologische Studie nach englischen Quellen dargestellt von Dr. Med. Franz Kronecker, Berlin. This lengthy paper reviews the literature of the subject in a careful manner but as this is only too familiar to Indian readers, it will suffice here to give the conclusion arrived at which is as follows. Although the question does not appear to be completely cleared up, yet it is probably that *kala azar* is only a severe modification of chronic malaria, which in the swampy low lying Assam has taken on a peculiarly virulent and recurring form, but there is still lacking exact proof, which would allow the above theory to be declared a well-grounded and scientifically based fact.

L. ROGERS, M.D.

SPECIAL SENSES

The *Ophthalmic Review* for January 1901 contains some interesting matter. Two papers on **Kronlein's Operation** for clearing out tumours from the apex of the orbit by Domela Nieuwenhuis (Zurich) and Valude Paris are reviewed.

In this operation access to the orbit is obtained from the outer side by dividing portions of the external angular process of the frontal bone and of the molar bone, turning the divided piece of bone outwards as a flap with the soft parts covering it.

The external rectus is then divided close to its insertion, &c. and after the operation its divided ends sewn together again.

The wound heals up soundly and quickly, and very little deformity remains. The danger of the operation is slight, and a good view of the structures in the orbit is obtained. None of the methods of obtaining access to the orbit from the front by tenotomy compare with Kronlein's Operation in regard to efficacy, while in them the globe is so much damaged in the attempt that its integrity is almost sure to be lost. Out of 45 cases of Kronlein's Operation recorded the globe had to be removed in five cases either at the time or later. In none of the remaining cases did phthisis bulbi occur. One patient died soon after, probably from intracranial invasion by the neoplasm.

Terson of Toulouse entertains no doubt that it is to the anterior capsule that subsequent interference with clear vision is due after **cataract extraction**, and discusses the question how can the removal of a portion of it most safely be done. It is so much more easily removed when an iridectomy has been done that Terson has in a large number of cases given up the "simple" operation, as he considers the attainment of a pupil, clear from capsule and which will not require further interference, with the risks thereby involved to be a greater gain than even the "charm of a round pupil." The chief danger in removing a bit of capsule by means of forceps is, of course, dislocation of the lens. Terson thinks there is not much danger of this if the following precaution be observed. Before proceeding to operate at all he dilates the pupil, and carefully by means of oblique illumination examines the surface of the capsule, if this be smooth, uniform, and shows no markings he is satisfied and may employ no instrument other than the fine forceps, under the teeth of which it will give way without any danger of the smallest displacement of the lens. But if it shows various markings and alterations of shading, particularly in the pupillary area, it is better at the operation to take a cystotome, and with it make a small scratch at the lower margin of the pupil (as is done by Colonel G. Hall, I.M.S.), the forceps will then be able to remove without any risk a suitable portion of capsule.

In a discussion at a recent meeting of the Ophthalmological Society, on a paper on "Superficial Choroidal Atrophy, without Subjective Symptoms," in a member of a family subject to **night blindness**, the President remarked on the great benefit to be derived from the wearing of golden yellow glasses in cases of night-blindness.

Silfrast has examined with care records of 285 cases of **cataract extraction** divided nearly equally between the "simple" and the "combined method," and his results are very decidedly in favour of the performance of iridectomy.

Dividing the results into three classes—good, medium, and bad—80.8 per cent of the cases with iridectomy fell to be placed in the first class, but only 69.9 per cent. of those without iridectomy could be placed besides them, 17.5 per cent. by the former method and 18.5 per cent. by the latter, went into the second class, and 1.7 per cent. of those with iridectomy, as against 11.5 per cent. of those without, were found in the third class. Twelve per cent. of those without iridectomy had pro-lapse of the iris.

Randolph (Baltimore) has made experiments on the **Regeneration of the Crystalline lens** in rabbits. In eight out of twenty cases of extraction regeneration took place. The form of the regenerated lens when complete differed in no respect from the lens which had been extracted—this occurred in four cases. The regener-

ation (in rabbits) occurs only when some portion of the lens are left behind at the extraction. Removal of the lens in its capsule is followed by a negative result. The volume of the regenerated lens may be equal to that of the original lens. It is usually lenticular, but may be ring shaped or semi lunar. Rudolph confirms the extraordinary observation of Colucci, Wolff and Müller that after the removal of the lens of the triton in its capsule it is regenerated from the epithelium of the iris. There is often great activity of the capsular epithelium after the extraction of a cataract, may this not says the reviewer (E Jackson), be an attempt at regeneration—an attempt which is so often successful in creatures lower in the animal scale?

Posey, in the *Pennsylvania University Medical Magazine* for December 1900, discusses the successful **Removal of Cataracts in the Insane**, with recovery of mind attending the restoration of sight. The title, however, hardly describes the paper properly, as in the two cases recorded the loss of sight precipitated loss of mind, and being its cause restoration of sight was not unnaturally followed by sanity. The question of removal of cataracts coming on in people who have previously been insane is not discussed, though it is a more interesting one in many ways and one the advisability of which is much more open to question. Some years ago the reviewer removed two cataracts in two insane people. One did well and the mental condition improved. The other became unmanageable and the eye did badly and no improvement followed. He has heard of other cases failing. Further experience is required especially as to the best method of keeping the lunatic quiet after operation and preventing him from spoiling the eye. Granted that this can be done, operation would appear advisable.

Suprarenal extract in diseases of the middle ear—Somers in the *Therapeutic Gazette* (December 1900) refers to the difficulty in obtaining atrophic solutions, and to the putrefactive changes which inevitably take place in a short time, owing to the large amount of animal matter present in the diseased glands. He has used the following solution for nearly two years and found it keeps well, and that there is no danger of infection from its local application—

Suprarenal	xx	grs
Phenic acid	"	"
Eucalin hydrochlor B	v	"
Aqua dist	3ii	"

Macerate for ten minutes. Filter

As a pure astringent and local vasomotor constrictor, it is very valuable. In chronic otorrhoea attended by granulations, its application is followed by sterilizing of the granulations and swollen mucosa and opening of the perforation in the drum. In acute inflammations of the drum too, it is of use in giving temporary relief, and if applied early enough possibly in aborting the attack. In some cases of sclerosis even Bates has obtained improvement when hearing was not benefited by politzerization.

On a new method in the dissection of soft cataracts—By Percy Dunn (*Lancet*, 29th December 1900). In dissection as at present practised the lens substance is only slightly broken up care is taken not to let the aqueous escape and rapid swelling of the lens is avoided as much as possible for fear of glaucoma. Dunn proposes to drain away the aqueous before withdrawing the needle, as he believes further rapid swelling of the lens becomes then impossible. The tension would only be restored as far as the swollen lens permitted, i.e., the tension when restored would be in part due to the swollen condition of the lens and in part to the resecreted aqueous. Glaucoma could not then arise. Moreover friction breaking up of the lens is thus possible. Another advantage is claimed in the lowered tension causing more rapid circulation of intra ocular fluids, thus increasing the rapidity of absorption of the lens

matter. Dunn uses a broad cataract needle, and after freely breaking up the lens he turns it slightly on its axis so allowing the aqueous to escape before withdrawing the needle. In the only case he has tried it the pupil became black in four days' time and in fourteen days merely a remnant of lens remained.

F P MAYNARD, F.R.C.S.

THE BOMBAY MEDICAL SOCIETY

PLAGUE TREATMENT WITH LUSTIG'S SERUM

Dr N H CHOKSEY (Khan Bahadur, M D, *Honoris causa*, Freiburg) is well known as an authority on plague and its treatment. We, therefore, welcome the reprint of an article dealing more especially with the value of Lustig's serum in the treatment of plague, this paper having been read last September at the *Bombay Medical and Surgical Society*.

After describing the various forms of plague, Dr Choksey describes the so-called selection of cases made for trial of this serum. This selection amounted to no more than the exclusion of moribund cases and convalescents. The following preliminary conclusions were deduced by Dr Choksey—

"(1) That the serum exerted a distinctly favourable influence on the course of plague.

"(2) That where it failed to avert death it prolonged life.

"(3) That it did not exert much effect in these types characterized by an extremely high mortality rate.

"(4) That its application is mainly limited to the bubonic type of plague.

"(5) That encouraging results (59.3 per cent.) of recoveries have been obtained, and that in private practice, where cases are seen early, it would be more useful.

"(6) That it exerts no deleterious influence on the patient, but is capable of conferring immediate but temporary immunity against plague, this immunity may last from ten to fifteen days. This treatment has been tried upon a large scale by Dr Choksey, and in a long series of cases, 484 by serum, 484 by ordinary methods of treatment, there was found to be a difference of 1.57 per cent. in favour of the serum cases. Dr Choksey very fairly points out the difficulties of the alternative method of selecting cases.

Dr Choksey's interesting article concludes with a note on general and local treatment. Last year we noticed the report of Dr Polverini on the same subject.

The following Committee was elected for the year 1901: Lieutenant-Colonel Hatch, Lieutenant-Colonel Dimmock, Major C H L Meyer, Dr S B Nariman, Major L F Childo, Dr N F Surveyor, Lieutenant Colonel W H Henderson, Major Quicke, I.M.S., with Major H Herbert, again, as Honorary Secretary. The financial condition of the *Bombay Medical and Physical Society* is satisfactory.

The following papers were read—

(1) Major W H Burke, I.M.S., read notes of an interesting case in which a piece of metal, the magazine of a Winchester express rifle 3 inch long and 1oz 80 grains in weight, lay buried in a man's thigh for seven months. The patient had been extracting cartridges from the rifle, when they exploded and the rifle burst at the breach and part of it entered and became embedded in the thigh. High fever and offensive discharge from the wound followed, and it appears that the patient never allowed satisfactory examination till he came into the hands of Major Burke. At this time there was a sinus with pain and a persistent discharge. Under chloroform Major Burke cut down and without difficulty removed the foreign body. Recovery after this was uneventful.

Another case shown by Major Burke was that of the removal of the astragalus for diseased bone. The case is illustrated by skiagraph taken by Major Collis Barry, I.M.S., and the patient has lost a good foot and can ride a bicycle and walk with scarcely any limp.

Captain G Lamb, I.M.S., exhibited a small tumour sent for examination by Captain King, I.M.S. It was removed from the scrotum of a scap. It turned out on examination to be a calcified encapsuled guinea worm. In another paper Captain Lamb summarizes the result of a tour he made in Gujarat during the famine of 1900 for the purpose of ascertaining the cause of the mortality returned under the head "Fever," and to examine the water supplies, for the presence of comma shaped micro-organisms. Cholera had practically ceased when Captain Lamb arrived. In all 33 well waters were examined in fourteen different localities. In eight of these localities comma curved bacteria were found and they were absent in six. In seven of the above eight localities cholera cases were still occurring. In the six cases where no comma curved bacteria were found, no cholera was occurring at the time of the examination. "There was thus a marked correspondence between the prevalence of this disease and the presence of curved micro-organisms in the water supplies." These results much

resemble those obtained by Mr. Haffkine and Dr. W. J. Simpson in their paper read at the Indian Medical Congress in 1894 (see *Indian Medical Gazette* March 1895, p. 89). But the Calcutta commas were not differentiated by the serum agglutination test. Mr. Haffkine explains the fact that comma shaped micro organisms (which though not the true cholera vibrio belong to the same type) are found in places where cholera exists and are absent in places free from cholera, on the hypothesis that the whole tribe of curved bacteria require very similar conditions for their existence, and where the local conditions are favourable for the growth of curved bacteria in general the true cholera microbe develops and propagates in large numbers, causing an outbreak of the disease. An examination like that of Captain Lamb would have the advantages (1) of determining by examination of the waters when it would be safe to return to the place (and use the water), (2) it would give warning of a serious outbreak or recrudescence of the disease, or (3) where cholera is epidemic it may reveal the sources which are dangerous. Captain Lamb adds a note of 25 wells reported to have been permaunated 8 contained commas, 17 were free. Dr. Surveyor read a paper on two cases of filaria. The tumours were of an obscure nature, and the diagnosis was chiefly based on the finding of the filaria in the night-blood.

ANNUAL REPORTS

THE CENTRAL INDIA AGENCY REPORT

LIEUTENANT COLONEL A. DANE, I.M.S. submits the short medical report of this Agency. There are ninety dispensaries in the Agency. In all over 869,000 patients were treated. Since the report was submitted small pox in epidemic form has broken out in the Agency. Cholera was very rare. Malarial fever and dysentery furnished the majority of the patients but the early cessation of the scanty rains led to a decrease in the amount of malarial fevers in September and October. The three plague detection stations were in work and detected three cases of plague. Lieutenant Colonel P. A. Weir, I.M.S., performed 225 major operations, including 194 for cataract. As usual Lieutenant Colonel Gimlette at Indore did a large number of lithotomies.

Vaccination is satisfactory in Gwalior, Baghelkhand, and Bhopal, but backward in Malwa and Bhopawar.

In Central India there were 469 operations for cataract, 5 laparotomies, 47 operations for piles (crushing and cautery), 96 amputations, 115 operations for trichiasis, 85 for entropion, 11 rhinoplasties, 16 harelips, 9 excisions of the breast, 17 hernia, only 4 for liver abscess, for stone 9 suprapubic (under what conditions?), 27 lateral lithotomies and 88 litholapaxies, 275 tapplings for hydrocele, 49 tapplings with injection and 1 only of excision of the sac. There were also six ovariectomies.

REPORT OF HYDERABAD ASSIGNED DISTRICTS

THE information given in this report on medical matters is scanty and has to be made out chiefly from the annual returns given in the appendix. There are 47 civil hospitals and dispensaries in this administration, which treated in 1899 over 310,000 patients. We are glad to see how large a number of women and children attend these hospitals. The falling-off in total of surgical operations is due to the alterations in the list of operations. The Duffern Hospital returns showed some improvement. The selling of quinine through the post offices showed a slight falling-off. Berar had only two plague cases. There was a considerable increase in both vaccinations and revaccinations, due to influx of persons in search of famine relief and the use of lanoline lymph.

THE REPORT OF THE AGENCY SURGEON, BALUCHISTAN

THE Report of the Agency Surgeon for the Province of Baluchistan appears in the Administration Report of that Province for 1899-1900. The health of Baluchistan is described as good during the year, owing probably to an abnormally small rainfall (only 5 inches). This scanty rainfall, while it led to great severity, was not attended with any serious outbreak of disease. Scoury and ulcers as usual were common and worse than usual.

In the Province of Baluchistan there are 5 civil surgeons, 4 assistant surgeons, and 25 hospital assistants and these officers attended to over 165,000 patients. Of this total we are glad to see that 24 per cent. were women and children, women are allowed to leave the seclusion of their home more to attend hospital than for any other purpose. About one fifth of the attendances were for malarial fevers. Next of general diseases comes rheumatic affections, dysentery, and scurvy, of "local" diseases we find over 17,000 ulcers. These ulcers are, we presume, the notorious "frontier sores," "Sindh boils," to which so many names have been given. We would be glad if some medical officer in those parts would write on these ulcers. Little or nothing has been written of them for years past since the well known paper of Lewis and D. D. Cunningham. Their importance is great, but their pathology is but little known.

British Baluchistan was practically free from small pox in 1899, but the people generally are too apathetic to avail themselves of

the benefits of vaccination offered to them, though when an outbreak occurs they gladly send for a vaccinator. Cholera spread from a famine stricken colony in Karachi to Southern Las Bela, Makran, and other territories, but did not penetrate into Kalat or Quetta. Lieutenant-Colonel Fullerton, I.M.S., the Agency Surgeon, urges the necessity of making use of the springs in the Bolan Pass, which are "practically inaccessible to cholera infection" for the water supply of Sibi, a station which may any day become of the greatest importance in case of large movements of troops. It has been always found that large bodies of troops or labourers suffer much from cholera in Baluchistan owing to the nature of the water supply, being so easily open to pollution. The immunity of that province from cholera in recent years has been due to the smaller numbers employed on public works, and to the rapidity of railway communication contrasted with the old Bolan road traffic. Captain C. H. S. Lincoln, I.M.S., was in charge of the Plague Interception Camp at Sibi. No plague cases were found.

In the report of the Quetta Hospital, Major W. R. Edwards, I.M.S. the then Civil Surgeon, notes the absence of typhoid in 1899 (it has, however, recurred in 1900), the malarial fevers were mild in type. A mild outbreak of scarlet fever is noted, but it is not stated if it affected the European or the Native community. The "major" operations by the old reckoning were 107, but only count by the new list as 62. Of 25 stone cases 21 were crushed, and there were no deaths from stone.

SANITARY MATTERS IN MADRAS

THE Minutes of Proceedings of the Sanitary Commissioner, Madras, usually contain much that is of general interest.

An interesting letter dated 9th February 1900, discussed the question "Should Water in Malarious areas be filtered?" in the light of the new prophylaxis. He points out that whether the soil or the mosquito theory be accepted water must, he holds, be accepted as a vehicle.

The question of the conveyance of malaria by running water is gone into, and it is stated that the inhabitants of many towns on the Irrawaddy (Burma) are remarkably free from malarial poisoning. Lieutenant-Colonel King, I.M.S., also points out that there has been more fever in Cuddapah since the introduction of the new water supply than before it—a result rightly attributed by Colonel King to the "further introduction of unremoved moisture," or, as Lieutenant-Colonel Giles would say, owing to the leaky water from hydrants having furnished numerous breeding places for the anopheles.

In another portion of these proceedings the fact that inoculation against small pox is still practised in several parts of the Madras district is noted.

An admirable circular from the Madras Sanitary Commissioner to all local bodies is also given, in which Lieutenant-Colonel King, in clear and simple language, gives advice to municipalities and district boards on the prevention of malaria in accordance with present-day views.

Propos of the neuritic symptoms in beri beri a short table is given, compiled by Captain G. G. Gifford, I.M.S., of the symptoms he noted in a recent outbreak of beri beri in the 18th Madras Regiment at Vizianagram. Of seven cases the heart symptoms were pronounced in five, and the pulse was rapid, 113, or slow 60, in two others. The reflexes were as follows: Pupils slow or sluggish in four cases, in others all the reflexes of spastic paraplegia were present, ankle clonus and great pain in legs were also noted. Edema was absent in all cases. In five cases fever for one or more days preceded the attack. Under the heading Numbness (tremor) symptoms are noted in six out of the seven cases, viz. partial loss of pin prick sensation, pains in legs, partial loss of heat sensation, loss of cold and heat sensation, &c. The conjunctivae are noted as normal. In nearly all cases the patient could scarcely feel boiling water. A clinical account of these cases might well have been published in these columns.

In a letter in another report (Proceedings for fourth quarter of 1899) Lieutenant-Colonel Kings, I.M.S. points out that more advance would certainly have been secured (in the question of the biological disposal of sewage) had it not been that the Army Sanitary Commission regarded the subject as of no greater value than affording it an opportunity for indulging in mild sarcasm.

There are many other points of sanitary interest in these Minutes which we are obliged to pass over.

Correspondence.

IS THE GURKHA PREDISPOSED TO PULMONARY PHTHISIS?

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Captain Lalor's conclusion in his article in your issue of February 1901, that the Gurkha is constitutionally predisposed to pulmonary phthisis seems to me to be hardly warranted, for the prevalence among them of the disease may be capable of a very different explanation.

When I was in charge of the 2nd Gurkhas at Dehra Dun I found, exactly as Captain Lalor has done in Shillong, that there were a large number of cases of phthisis in that regiment than I had met with in any other Native regiment of which I had been in charge. The late Colonel E. A. Travers, then in command of the 1st Battalion, pointed out to me, however, that the matter had been gone into and quite another conclusion arrived at, namely, that it was our old enemy—a dust phthisis.

The facts were as follows—

Three eighths of the battalion consisted of married men living with their families in the married quarters, while the other five eighths lived in the bachelors' barracks. In the latter case, the cooking was all done in the open or only under a shelter, and the cooking places were separate from and at a distance of several yards from the living rooms in which fires were not made. In the case of the married quarters the cooking was done in the living rooms, which were not provided with chimneys, and the smoke found its way out as best it could. This, in the cold weather (and the cold at an elevation of 2,000 feet is considerable at that season), must have been a matter of great difficulty, for the rooms were capable of being almost hermetically closed, and the native of Nepal is not the only person who, under these circumstances, closes up every draughty cranny he can.

Now the cases of phthisis occurred almost exclusively among the married men, who lived in this atmosphere, and scarcely at all among those living in the bachelors' barracks. Here, then, were at work the well recognized predisposing causes of phthisis—bad ventilation, a particulate atmosphere, and absence of sunshine.

So convincing did the arguments appear, adduced to show that these were the causes of the prevalence of phthisis in the regiment, that Government sanctioned the expenditure of a considerable sum of money to so reconstruct the married barracks that ventilation should be permanent, and to build cookhouses outside the living rooms. The effect of the change will be watched with considerable interest.

The question which must be answered before Captain Lalor's assumption, that the Gurkha is "constitutionally" predisposed to phthisis, can be granted is this—

Does the Gurkha in Shillong live in well ventilated barracks, filled with sunshine, such as the sepoy in the plains inhabits, or are they such that his apparent predisposition to phthisis may not reasonably be put down to hygienic deficiencies well understood and easily rectified?

It is a question of considerable practical importance and it would be of great interest to hear what is the experience in this matter of medical officers of Gurkha regiments in other stations.

I am yours, &c.,

CALCUTTA,
The 17th February, 1901

CLAYTON LANE, S D, LOND,
Capt, I M S

[We invite the opinions of medical officers on this point.—ED, I M S.]

THE BODY TEMPERATURE OF THE EUROPEAN AND NATIVE IN INDIA, WITH SPECIAL REFERENCE TO THE GURKHA

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I have read Captain N P O G Lalor's article on the Body Temperature of the Gurkha and his observations on the value of sugar in its relation to phthisis, in the last issue of the *Gazette*, with much interest, and am glad he is working up these important subjects. The medical officer of a Gurkha corps, if he has served with other regiments, discovers so many constitutional peculiarities in these Nepali soldiers, and so many disease divergences from the numerous other races constituting the Indian army, that he naturally gets puzzled how to account for them. Having myself served an apprenticeship with most of the races in this Presidency, including Dogras, Sikhs, Muzbis, Punjabis, and Hindustani Mahomedans, Afghans and other trans-frontier Pathans, besides Jats, Purbias, Rajputs, and others, as well as several times with Gurkhas with a sprinkling of Assamese and Garhwalis, I may be permitted to make the following remarks.

The Gurkha medical officer discovers that not only do his men exhibit a greater liability, compared with other races to phthisis, but to several other diseases, as pneumonia, pleurisy (not infrequently with free effusion running on to empyema), malarial fevers (often of a virulent type), dysentery, and others. Some may incline to doubt this, but I am convinced that with longer experience the truth of this observation will become apparent, for, owing to the constitutional apathy, torpid intelligence, and taciturnity of the Gurkha patient (sitting on his bed truly like nothing so much as an unconquering Bhuddist idol), many of his diseases are apt to be erroneously diagnosed, and unfortunately very rarely are *post mortem* allowed to clear up doubts. Thus such stool terms as "ague" or "remittent fever" absorb many diseases which more minute study or ripper experience would have resolved into pleurisy, pneumonia, or enteric fever.

They are also peculiarly prone to attack from any epidemic disease that may be about, as cholera, influenza, or malaria, and as before observed, they suffer severely.

If the medical officer have had any experience of European troops (as I have had), he will be struck with their remarkable close resemblance to the British soldier in all their ailments, as especially witness their venereal and enteric.

The conclusion, therefore, one comes to is that the Gurkha, though by no means a schemer, is altogether a "more delicate" and "more sickly" individual than any other race in the Indian army,* and, like the British soldier, is considered an expensive exotic to be conserved and perennially kept cool in a hill climate.

Now, why is this? No doubt numerous supposed reasons may be advanced to account for it, which on maturer consideration we find it rather difficult to reconcile, but if not careful we may easily be misled into erroneous conclusions based on hypothetical differences in race, or local climate, or special epidemic influences, or idiosyncratic peculiarities—shall I say constitutional "abnormalities," in Captain Lalor's sense.

Captain Lalor has been induced by his observations to arrive at the following deductions: (a) The Gurkha has an abnormally low body temperature; (b) this is most probably due to an abnormality of muscular metabolism; (c) the abnormality can be reduced by the administration of sugar, which is a distinct and important food of muscle.

And he argues that, as "the Gurkha is predisposed constitutionally to pulmonary phthisis," wherein waste of muscular and fatty tissue is a prominent feature, the administration of sugar, which substitutes itself for muscle in metabolism and is a raiser of temperature, is distinctly indicated.

Captain Lalor thinks "it is admitted that the normal temperature of the Gurkha sepoy is lower than that of the European, and lower than that of most of the other native tribes inhabiting this country—presumably Assam, for he is writing from Shillong in the Khasia Hills. He believes his experiments prove this.

While acknowledging the credit due to the intention, it is to be regretted these very useful experiments were not more accurate and complete, and I sincerely hope they will be repeated on more scientific lines, for they are not only interesting, but may have far reaching results. At present they can only be accepted as promising, and not at all as positive or definite. I can here only barely indicate some points on which information would be valuable, though I must admit their difficulty. They are too limited in number, both as to period and subjects experimented on, they cover only a few weeks in cold weather (mid winter—January?) and are no indication of results in hot and dry or humid seasons; there is no intimation of the nature of the physical labour performed throughout the twenty four hours and especially prior to recording the temperature, the exact hours of morning and evening temperature are not noted, nor their relation to sleep or meals or to diurnal atmospheric temperature, and above all the daily diet is not recorded, nor what precautions taken to ensure abstinence from sugar at undesirable periods. Even the quantity of actual sugar is not stated, only mentioned as Indian "sweets," which, however, may contain 50 per cent cane or starch besides 15 per cent "fat"—all heat-raising agents. All these things have an important bearing on body temperature. It is also necessary to note what person took each individual temperature, prolonged and bitter experience has taught me to utterly distrust subordinates. Moreover, temperatures taken while sitting in the warm sun or before a fire will record differently to those taken in a moderately warmed room or in a cold verandah. Then, again, what means were used to test the accuracy of the thermometers with their known certificates or a reliable standard instrument, or were the ones employed compared daily with each other? If the ordinary Medical Store Depot thermometers were used, I do not understand whether the fractions quoted are parts (four to a degree) or decimals, but if so, should be stated, for if ordinarily one understands each division of a degree to represent two points and the four markings 8 points), the point readings given would be just double—87.1° F and 87.4° F being 87.2 and 87.8 respectively—an important difference.

I trust I will not be considered hypocritical nor discouraging, for these experiments appeal to me, but it would be wrong to allow erroneous conclusions with far reaching consequences to be drawn from insufficient data, although they even favour my own views.

But before discussing subnormal temperatures, it is essential to know what we can rightly regard as the normal temperature of the body, both in the European and the Native, in India. It is unfortunate that no very reliable observations on the body temperature of natives of India are available for the establishment of a standard. Colonel A. Crombie's (I M S) investigations in 1873† appear to be the only serious attempts made to solve this question, and they are by no means conclusive nor, considering they were conducted in the hot, steamy atmosphere of August in

* There may, however, be certain regiments in Madras and Bombay and probably some Sikh corps which for reasons discussed in the sequel, may run the Gurkha close on this score.

† Published in the *Indian Annals of Medical Science*, No. XXVII.

Lower Bengal, are they capable, if accepted, of universal application. Crombie's observations on Europeans in Calcutta were more prolonged, frequent (periodically made hourly), and believed reliable, but as he took the temperature of the latter in the mouth and of the former in the axilla, and allowed only 0.2°F , an addition to the axillary temperature for "correction," the comparison cannot be satisfactorily made. However, his conclusions were that the body temperature of the European living in Bengal is about 0.41°F (say, half a degree) higher than the average of healthy persons in England—the mean mouth temperature for the former being 98.49°F , and the latter (observed by Ogle, Allbutt, Casey, and Rattray) 98.04°F . The following table,* which I have reduced to round figures, show the ratios—

Europeans	Mean A M temperature	Mean P M temperature	Mean tempera- ture	Maximum Daily Range
Averages in England (of 4 physicians)	97.5	98.3	98	1.4
Averages in India (Crombie's)	98.2	98.8	98.5	1.3

Owing to frequent moves I have few references available here, so I do not know how far these observations are accepted, although Birch and Crombie believe them absolutely reliable. But if permitted as a standard, our ideas regarding "normal" and "sub normal" temperatures must undergo a radical change. Instead of 98.4°F being the normal axillary temperature of a European in England (or in India), as usually accepted, the real mean diurnal temperature is 97.8°F (subtracting only 0.2°F from the mouth temperature, according to Crombie) in England and 98.30°F in India, but if the temperature be taken in the morning it is 97.60°F in England and 98°F in India, while in the afternoon it is 98.1°F at home and 98.6°F in this country.

According to our present teaching these would all, except the last, be understood as subnormal temperatures, and yet, please note, they are the A M and P M means—implying that if the temperature be taken in the early morning or early afternoon (as they ordinarily are, particularly in the summer and notably in the native hospitals in India), these records would be lower still. Thus one English observer has a minimum axillary A M temperature of 96.7°F and P M of 97.1°F , another 97°F and 97.8°F respectively, a third 97.3°F and 98°F , and a fourth 97.3°F and 98.2°F , while Crombie's A M minimum of Europeans in India (Bengal) registers 97.5°F and P M, 98.1°F . Note that these are averages of numerous observations.

As regards Europeans in India a special fallacy (besides a certain other alluded to in the sequel) may easily lead astray, and I do not know how far this may have vitiated Crombie's results, for, as De Chaumont says, tropical heat raises the temperature of a new comer, probably because the evaporation from the skin is not capable of counterbalancing the great additional extra heat, but it is known that in old residents the same fact does not hold good, and in fact the latter perspire more freely than the former. Brigade Surgeon I C Johnston, A M S, recorded† what is described as a very careful series of experiments made in Bellary (Madras) on soldiers of at least three years' service in India. The average of one series was 97.6°F , and of another 97.9°F , thus showing a distinct lowering from the classical normal temperature, 98.4°F . While Surgeon Major Boileau, A M S, from a long series of observations in the West Indies, came to the conclusion that there was no material rise‡. On the other hand, it may be understood that great humidity and closeness of the atmosphere so interferes with the evaporation from the skin and consequent lessening of body heat that the temperature rises and maintains a higher record.

The temperature of natives (of 55 Bengalis), on the other hand, Crombie found averaged 0.5°F , and indeed at noon (after one of their two enormous meals), nearly 1°F higher than that of the European in Bengal. Crombie thinks that the temperature of Natives may be considered to lie between 98°F and 99°F from 10 P M to 10 A M, and between 99°F and 100°F between 10 A M and 10 P M. But this is far too high for India as a whole, and even in Bengal or Assam is not borne out by general experience. On the contrary, in my humble opinion, the average native temperature is inclined to a lower range than that of the average European in India, and Colonel Hamilton's (I M S) notes, in the April 1900 issue of the *Gazette*, on Gurkha patients having subnormal temperatures can be confirmed among others than Gurkhas in the wards of most Indian medical officers as well as among European convalescents.

On a priori grounds this lower body temperature might be expected considering that the average native diet is non heating,

his temperament non excitable and apathetic, while there is an unrestrained radiation from his skin, his costume perilously approaching Kipling's estimate of Bhusti Gunga Deen's. Further, Rattray's observations on Europeans showed that respiration is so reduced in the tropics that about 18.4 per cent or 38.65 less cubic feet of air are respired than in England, i.e., a proportionately less consumption of oxygen and exhalation of carbon (nearly 20% less of latter) and watery vapour (6.7% less). The pulse, likewise, he found is reduced by $2\frac{1}{2}$ beats per minute. Thus other reasons for reduced temperature, even among natives. All these go to indicate that the vital functions are less vigorous in the tropics and consequently tissue metamorphosis markedly diminished, in proportion to the climatic heat and moisture.

It is obvious, therefore, that numerous prolonged observations under strictly scientific precautions are very badly needed to settle the standard normal temperature in India among Europeans and natives and among the principal races of the latter, discriminating particularly between meat eaters and vegetable feeders and hill tribes and plains men. That this is not a question of purely academical value, but one of practical import, will be clear from a perusal of Captain Lalor's suggestive paper.

Now to return to our Gurkha, if we are to provisionally accept Captain Lalor's view that his temperature averages abnormally low (and I am not inclined to altogether deny this), and in consequence his tissue metabolism is likewise low, the question arises: Can this be satisfactorily explained by solely racial differences? I strongly doubt it. It is true he is constitutionally phlegmatic, and that his habitation in a cool climate serves to reduce his temperature according to the authorities above quoted, yet he is a notorious meat eater and this would more than counterbalance any tendency to an abnormally low temperature, and, unlike the Bengali, subsists on wheaten flour as well as rice. There is one special peculiarity, however, which may satisfactorily account for this reduced temperature, and, I would fain hope, may receive study. Of all the Indian races in the army none indulges so freely as the Gurkha in alcoholic liquors, and contrary to popular, even medical, opinion, alcohol instead of being a stimulant and heat-derivative is a sedative and temperature reducer. Thus Dr Schäfer, Professor of Physiology, Edinburgh University, says: "The effect of alcohol is a fall in temperature, and not, as popularly believed, an increased heat of the body." Various observers [Davy, Litchens and Fröhlich, Godfrin, Weckerling, and Goppert, among others better known, are quoted] have found that alcohol taken in ordinary quantities as a beverage causes a slight depression, generally less than half a degree, in the temperature of healthy men, on the other hand, poisonous doses may cause a fall of five or six degrees—in fact, many of the lowest temperatures recorded in man have been observed in drunken persons exposed to cold. Sir Benjamin Ward Richardson, F R S, conclusively proved by experimentation on animals diminution from three fourths to two and a half or even three degrees, and that the depression is not transient but persistent, for several days after dosage.† Osler, in his *Textbook of Medicine*, notes an instance in which the patient suffering from acute alcoholism had a temperature of 24°C (75°F) which even after ten hours had not risen to 21°F .

So notorious is this indulgence among the Gurkhas, and so much is their stamina reduced thereby, that, in my opinion, more than half their illnesses are directly or indirectly due to it. This likewise accounts for their peculiar proneness to epidemic influences. And I really think their phthisis is only one form of alcoholic break down, added doubtless by deficient barrack room air space. I, therefore, leave it to be judged how far the canteen system in vogue in some of these (and other native) corps is responsible for the inefficiency of their men. Introduce abstinent principles among them and discourage home manufacture of rice beer (*phar* or *Za*) and then note the marvellous change that will occur.

As to the value of sugar as a real stimulant and raiser of temperature there can be no doubt, and its efficacy as a muscle food (though commonly taken for granted by our Indian jails) was practically tested at the German Army manoeuvres in 1899. Its success was so great in resisting fatigue that the Board of Medical Officers recommended its addition to the daily rations reserve rations, and as a "temporary allowance for strengthening men and renewing their vigour on the march."‡ More detailed accounts of this interesting subject, as well as of the physiological effects of alcohol above alluded to, may be found in my little book on "The Scientific Valuation of Alcohol in Health," obtainable at Thacker, Spink and Co, Calcutta, and other booksellers.

Yours, &c,

P W O'GORMAN,
MAJOR, I M S,
Civil Surgeon,
JHANG DISTRICT

LYALLPUR
PUNJAB,
1st March, 1901

* See Colonel Birch's (I M S) article on the Influence of Climate on the Constitution, in Davidson's *Hygiene and Diseases of Warm Climates*.
† In Army Medical Reports, Vol. XVIII.
‡ See Parke's *Hygiene*, 7th Ed., p. 356.

* *Text book of Physiology for Advanced Students*, Vol I, 1898, p. 820.
† *Cantor Lectures*, p. 70.
‡ See *Auring Records*, September, 1899.

HYDROCELE AND ITS CAUSES

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Referring to Captain Jennings's letter in your January issue, we all know the common belief that tight trousers (not only tight breeches) is a cause of hydrocele in Europeans. Punjabis wear a tight *lungot*, and among the athletic Sikhs of the Port Blair Police I have seen men during their gymnastic exercises with their *lungots* so tight as to make me wonder how they managed, yet amongst them (and I had charge of their hospital for about eleven years) hydrocele was a rare disease. Again, the Nicobarites wear their *lungots* in such a manner as to compress the testes, giving one the idea that they put them away into the inguinal canals and amongst them I do not remember seeing a case of hydrocele. On the other hand, I find in this District of the N W P and the neighbouring ones that the disease is very common, amongst Mahomedans and Hindus alike, those who wear, and those who do not wear *dhotees* and *lungots*. Double hydrocele being almost as common as the single variety. What is the cause? Locality and climatic influences?

BASTI, N W P,
27th February 1901

Yours, &c.,
GEO T CARROLL,
Civil Surgeon

CHOLERA IN MADHUBANI

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—The cholera was more or less raging at Madhubani for nearly a year with breaks for shorter periods at times.

After my coming to this subdivision in July, 1900 I received reports of cholera cases in M. hahani, Chul dahi, Madhubani proper, and Bhowra part of the town. The outbreak was very severe in the Bhowra part of the town from 24th September to 15th November 1900.

On the 24th September 1900, a Rajput boy, Koda by name was attacked with violent purging and vomiting and died within ten hours' time. On the receipt of the report I at once went to the spot and searched all the houses in the locality. I found ten persons laid up with cholera and some in collapse stage, and they were being treated by their own country medicines.

At my request all of them readily agreed to use hospital medicine.

Of the 174 attacks in this locality only 77 cases were treated by me. There were 103 deaths in all, of which 28 deaths occurred from among those treated by me, and the rest from among those that either remained untreated or treated by native quacks.

I used the following medicines—

- No I.—Bismuth carbolic, and belladonna mixture
- " II.—Sulphuric acid and opium
- " III.—Oil of eucalyptus

With the mixture No. I I treated thirty persons of whom twenty cured. Mixture No. II was given to twenty persons, of whom sixteen cured. Oil of eucalyptus was tried only in twenty one cases, of which thirteen were cured.

The mortality with all three mixtures appears almost equal. Of the 97 cases who were either treated by village quacks or remained without treatment the mortality was very nearly 60 per cent.

As the cholera was hanging on for a long time in the town it was thought expedient that all the wells should be disinfected with potash permanganate, and this was done under my direct supervision. The burning of sulphur in infected areas was resorted to, though I am in doubt whether the latter remedy had any appreciable effect. It is doubtless that the disease ceased in the town as soon as all the wells were disinfected with potash permanganate.

I have read with interest the treatment of cholera by Major Brown, I M S with oil of eucalyptus and the better results obtained by it. I shall try it in larger number of cases when opportunity occurs.

The object of my sending this for publication is to show that the disinfection of wells, whether considered contaminated or not, with potash permanganate has proved a most useful agent in checking cholera in the town which was for about a year in existence.

Yours, &c.,
R R GUPTA, I M S,
Assistant Surgeon

February 1901

Service Notes.

LEAVE out of India to the extent that their services can be replaced is reopened to officers of the Indian Medical Service. This is the best that can be done till the long roll of medical officers return from China.

The following medical officers of I M S passed out of Netley in January last—

	Marks.		Marks.
* C W P Melville	6001	W D Pringle	5,100
† R McCarrison	5024	A W C Young	4,982
† J Masson	5030	J G G Swan	4,838
§ N S Wells	5111	R M Dalziel	4,805
W M Anderson	5340	J J Robb	4,416
I H B Stanley	5180	S A Russell	4,300
W H Leonard	5100	R B B Foster	4,182

* Gained the First Montefiore Prize of £21 and Medal
† Gained the Herbert Prize of £20, the Martin Memorial Medal, the Second Montefiore Prize and the Prize in Pathology presented by Surgeon General W Hooper C.B.I.
† Gained the Maclean Prize in Clinical and Ward Work.
§ Gained the de Chaumont Prize in Hygiene.

CAPTAIN J M WOOLFEY, I M S, has passed the Lower Standard in Persian, and Lieutenant W Lap ley, I M S, in Urdu.

MAJOR F D C HAWKINS, I M S, is granted eight months' furlough (m.c.) from 5th February 1901. He has been acting as Civil Surgeon of Ghazipur, N W P.

DR H A MACLEOD, in civil medical charge of Ballia district is placed on plague duty in that district.

LIEUTENANT COLONEL G A EVERTON, I M S, has gone from Sitapur to Ghazipur as Civil Surgeon.

ARTICLES of special value and interest from the following Medical Officers, I M S, will appear in the forthcoming volume of the *Scientific Memoirs of Medical Officers of the Indian Army*, edited by Surgeon General R Thriver I M S, viz. by Major L. Roberts, I M S, on experiments in biological sewage methods; Captain Ferriside I M S, on experimental malarial infection in man with beautiful illustrations, and others by Captain G Lamb, I M S, Major D Prain, I M S, Captain A T Gage, I M S, and Major Alcock, I M S.

CAPTAIN BIDIE, I M S, has been granted six months' extension of leave (m.c.).

WE regret to record the death in action in Jubaland of Lieutenant Colonel C B Wainland I M S, P M O of the Force. Lieutenant Colonel Wainland was an M R C S of 1879, and R O P (Ed.) and entered the service (Bombay) in March 1880. He was recently Medical Officer of the Marine Battalion, 10th Bombay. He had had much war service, viz., Egypt 1882, Sudan, 1885, Burma, 1886 SS, and Dongola Expedition (Soudan), 1896.

The following is a list of the successful candidates for the Indian Medical Service at the competitive examination held in London on February 8th—

	Marks.		Marks.
A G McKendrick	3 140	C B McConaghy	2 611
G F Charles	3 892	W D Ritchie	2 501
J W Little	3 090	G C L Kerans	2 500
St J Moses	3 003	F W Browne	2 575
N F H Scott	3 011	E C Hepper	2 567
H H Foster	2 881	I T Thompson	2 456
G B Butt	2 811	J W Milne	2 478
C F Southon	2 788	J B Christian	2 477
H R Nutt	2 790	L P Briscoe	2 391
J K S Fleming	2 730	G Fowler	2 357
H W Milne	2 704	A Murphy	2 219
I W Summer	2 703	S Bose	2 212
J A Barnes	2 700	P L O'Neill	2 183
J Husband	2 627	C F Marr	1 890

The following is the list of successful candidates for commissions in the Royal Army Medical Corps at the recent examination in London—

London		Marks	London		Marks
F W Lambello	2,760	R L Hagger	2,171		
L G S Cahill	2,649	H W Long	2,098		
W C Stevenson	2,268	J R Wolland	1,900		
M O Beatty	2,220				

The advertisement announcing the examination stated that twenty two commissions in the corps would be offered. Competition is, as is well known, entirely at an end for the R.A.M.C. With the proposed considerable increase of the British Army, a very considerable increase in the list of medical officers is necessary. Not less than 300 appointments are necessary to fully man the service. Will they be forthcoming? Mr Broderick has spoken clearly enough, it is to be hoped that he will be able to act up to his expressed intentions—(Times Dispatch)

NOT a single Civil Surgeon employed in the South African war has accepted the offer of a commission in R A M C

A COMMUNICATED note in the *Journal of Tropical Medicine* advocated a partial return to the Regimental Medical System

LORD ROBERTS' despatches on the War in South Africa appeared in the *London Gazette* of February 8th. The Commander in Chief says—"I cannot speak too highly of the care and devotion shown by the medical officers to the sick and wounded, or the gallant way in which many of them have exposed themselves when performing their duties on the field of battle."

We extract the names of the following medical officers: Mr. Watson Cheyne and Mr. Kendal Franks, Consulting Surgeons; Major J. H. Frisch (New South Wales), Lieutenant Colonels W. K. Donovan and W. L. Gubbins R A M C, Major W. W. Pike, Captain E. C. Anderson, Lieutenant J. G. Berne, Captain P. J. Probyn, Major R. H. S. Sawyer, Captain Brownlee, Major Fiskally, Major Anderson (at Mafeking), Dr. W. Hayes, Surgeon Major Holmden, Major McLaughlin, Major Cox, Major Worthinton (Canada), Captain C. Smith (Yeomanry).

For Ladysmith are mentioned Lieutenant-Colonel R. Exham, Lieutenant Colonels Mapleton, P. H. Johnston, Major H. Martin, M. W. Kerin, Captain G. Walker, and Captain H. F. Platt, Major Treherne, Major J. F. Bateson, Lieutenant-Colonels S. H. Carter, R. L. Love, D. Bruce, F. R. S., Captain G. Walker (died). Belonging to the Indian Medical Service and the Indian Contingent we find the names mentioned of Major W. H. Elliot, I M S, Assistant-Surgeons J. Moore, J. B. Farrell, A. D. McIntyre, E. St. Romane and V. V. Chiodetti.

For the relief of Ladysmith we find mentioned Staff Surgeon F. J. Lilly, R N Surgeon C. C. Macmillan, R N, Surgeon E. C. Lornus, Sir William MacCormac, Mr. F. Treves, Sir William Storer (died), Colonel T. J. Galloway, Colonel J. A. (Jery), Lieutenant Colonel W. B. Allen, Major W. Baphe, Lieutenant E. T. Inkson, V C, Majors S. Butterworth, H. B. Hinde, A. S. Ross, Captain W. L. Hughes (killed), R. H. E. Holt (killed), N. Tyndale, J. N. Crumple, J. Dalton, Lieutenant H. B. Ormest (killed), Major S. Townend, Captain C. Martin, Major E. O. Millward, Major J. E. T. Reckett, Major T. B. Winter, Major Haywood, Captain E. W. Morphew, Captain J. D. Alexander, Major J. T. Cullin, Captain H. J. Parry, Major C. T. Goggin, Major F. S. Houston, Major G. H. Young, Captain E. M. Pichey, Major J. B. Buchanan, Captain N. Fachie, Major E. R. Cree, Major J. D. Moir, Captain Fairclough, Major A. Fitzgerald, Major A. Baird, Major J. G. Black, Mr. Clarence and Mr. Ghandi (Indian Ambulance Corps), Major B. Kirkpatrick, Major R. Mullins, Major F. A. B. Daly, Major W. S. Downum, Major T. L. Lucas and S. F. Trever, Major A. Dodd, Major T. Brownlee, Major Brazier Creagh and Captain B. Leumann (I M S since died), Major R. J. MacCormack, Lieutenant Colonel F. Hodder (died), Major T. P. Woodhouse, Major Hinde.

General Buller mentioned, among others already noted above Major J. F. Donegan, Lieutenant E. E. Trimble, Assistant Surgeon Moore, I M S, Lieutenant J. J. W. Prescott, Captain J. W. Jennings, Major O. R. A. Julian, Lieutenant-Colonel O. Todd, Lieutenant L. N. Lloyd, Captain R. J. W. Mawhinny, Major T. B. Winter.

LIEUTENANT-COLONEL R. D. MURRAY, I M S, of the Calcutta Medical College, has been granted furlough for eight months on medical certificate, and Captain R. Bird, I M S, M D, B S (London), R N C S (England), will act in his place as Professor of Surgery.

It is proposed to offer Major A. M. Davies, R A M C, a year's extension of his appointment as Bacteriologist Army Headquarters, India. When it is considered that if he goes home this year he should have to revert to the regular line, there being no such appointment in England, it is clear that the Surgeon General does wisely in retaining his valuable services in India.

CAPTAIN J. M. WOOLLEY, I M S, has been granted three months' leave (m c) in India.

LIEUTENANT COLONEL PERCY DELHAGA HAIG, I M S, P M O, Malakand Force, is permitted to retire from the service from 15th February 1901. He is a St. Bartholomew's man, and M R C S of 1873. He entered the service in September, 1876, and has been for nearly twenty years Medical Officer, 1st Punjab Cavalry. He served in Afghanistan in 1878-79-80 with the Peshawar Valley Force and on the Tonk Expedition. He was also severely wounded at the attack on Wana.

THE services of Captain A. W. R. Cochrane, I M S, F R C S, are placed temporarily at the disposal of the Punjab, and those of Captain J. C. Robertson, M B, I M S, at the disposal of the Government of the N W P and Oudh.

CAPTAIN J. M. CRAWFORD, I M S, having returned from temporary military duty is posted to Etawah, N W P, as Civil Surgeon, vice Major Scotland, I M S, gone on plague duty to Benares.

LIEUTENANT COLONEL HUGH McCALMAN, M D, I M S, has been granted six months' extension of leave (extraordinary) on medical certificate. He has been on sick leave since 1st April 1900.

LIEUTENANT COLONEL D. C. DAVIDSON, I M S, Civil Surgeon of Dharwar, has been granted one month's extension of privilege leave.

LIEUTENANT COLONEL W. A. QUAYLE, I M S, is confirmed as Civil Surgeon of Nagpur, and Major H. E. Barnstain, I M S, as Civil Surgeon of Nimar, C P.

CAPTAIN J. C. ROBERTSON, I M S, is placed on special plague duty in Benares.

CAPTAIN J. CHAYTOR WHITE, I M S, has been granted six months' extension of leave by the Secretary of State. He has been on leave (m c) since April 1900.

On the 1st March in the Civil Medical Department, Madras, no officer was absent on ordinary leave or furlough, and only four on sick leave. Fourteen medical officers were still absent on temporary military duty.

THE death is announced at Exeter on 9th February, at the age of 76 years, of Surgeon General S. C. Townend, C B, I M S. The deceased entered the I M S in 1855. He served in the Burma Campaign of 1852 and as P M O of the Kurram Field Force in 1878. He was severely wounded in the advance through the Shitgardar Pass. He was afterwards A M O of the Central Provinces and Surgeon General, Punjab, in 1880.

THE Report of Major Bannerman, I M S, on the value of inoculation against plague has been published. He shows that inoculation confers a high degree of immunity, and that if attacked the chances of recovery are materially increased.

THE death rate per mille of the American Army in the Philippines during 1900 has been 26.7.

CAPTAIN W. C. VICKERS, I M S, is appointed to act as Personal Assistant to the Surgeon General of Madras.

THE following regimental appointments have recently been made in Punjab Command orders: Captain H. J. B. Bamfield, I M S, to medical charge of 1st Punjab Cavalry, Captain N. R. J. Ramer, I M S, to 1st Punjab Infantry, Captain W. H. Kewrick, I M S, to 4th Punjab Infantry, Captain A. H. Moorhead, I M S, to 5th Punjab Infantry, Captain A. H. Moorhead, I M S, to 2nd Punjab Infantry, Captain C. H. Evans, I M S, to 3rd Pioneers, Captain W. H. Ogilvie, I M S, to 40th Pathans, Captain J. A. Black, I M S, to 41st Punjab Infantry, Major C. L. L. Gilbert, I M S, to 25th Gurkha Rifles.

WE are sorry to see the death announced at Home of Major Harry C. Hudson, I M S, of the 16th Bengal Cavalry. Major Hudson was a very well known man in the Punjab and an enthusiastic polo player. He had seen a lot of service, so did 1855, Burma (Ruby Mines), 1886-88, Manipur, 1891 (dispatches), action of Wano, 1894, Waziristan, 1894-95, Loche (dispatches). He was an M B B Ch of Trinity College, Dublin.

MILITARY DEPARTMENT letter No 2878-F, dated 22nd October 1900, sanctions the rates of pay allowed to all Native establishments from India serving in South Africa.

LIEUTENANT H. INNES is appointed to the officiating medical charge of the 18th Bengal Infantry.

CAPTAIN G. Y. C. HUNTER, I M S, was granted an extension of leave (m c) for three months.

A REVISED edition of Dress Regulations of the Indian Army has been published (I A R, Vol. VII).

CAPTAIN J. T. CALVERT, I M S, has gone again to Chittagong as Civil Surgeon, in lieu of Major D. M. Moir, I M S, who has gone to the Calcutta Medical College, to act for Major Havelock Charles, I M S, on sick leave.

MAJOR E. H. BROWN, I M S, is confirmed as Civil Surgeon of 24 Parganas, and Captain E. A. R. Newman, I M S, on temporary military duty, is appointed Civil Surgeon of Mymensingh.

LIEUTENANTS TO BE CAPTAINS, I M S

28th January 1901

Thomas Henry Dolan, M B
John Walter Forbes Rait, M B
Stewart Ranken Douglas
Jugono John O Menra.
Godfrey Tate, M B
Roy Pearson Baird
Andrew Thomas Gago, M B
George Campbell Laing, M B
George McPherson, M B
Sponcor Hunt.
Alfred George Sargent
Walter Hulbert Cox
do Vero Condon, M B
Henry Albert John Gidney
Henry Kirkpatrick, M B
Frederick Durand Sterling Fayrer
Padmalah Krishna Chitale
William Lothbridge, M B

We regret to record the death of Lieutenant Colonel James Clarke, I M S, at Serikote after a long illness. Lieutenant Colonel Clarke was educated at Queen's College, Belfast, and was an M D, and gold medalist of the Royal University of Ireland, D P H (Contab), and F R C S I. He served in civil employ in Bengal for some time and for several years past in the Punjab. He served on the Albu Expedition of 1883-84.

CAPTAIN F VICTOR HUGO, I M S, M D (London) acts as Civil Surgeon, Serikote.

We note that Mr Broderick, in his speech on the Address to the King, stated that "no past prejudices would be allowed to prevent giving the Army an efficient Army Medical Service."

The following medical officers have recently been gazetted to regiments: Captain J Gould, I M S, to 8th Bengal Cavalry; Lieutenant J D Graham, I M S, to 12th Bengal Infantry; Lieutenant M Mackelvie, I M S, to 17th Bengal Infantry; Lieutenant J J Urwin, I M S, to 18th Bengal Infantry; Lieutenant W A Coppinger, I M S, to wing of 5th Bengal Infantry at Dibrugarh.

The services of the following three officers are placed permanently at the disposal of Burma, Captain W G Fildmore, I M S, (Madras), Captain T Stodart, M B, I M S (Madras), Captain J R Rost, I M S (Madras).

The services of Lieutenant Colonel K H Mistri, I M S, and Major S L Prall, M B, I M S, are replaced at the disposal of Bombay, and those of Captain A Hooton, I M S, temporarily at disposal of the same Government.

The services of Lieutenant Colonel S H Dinra, I M S, are replaced at disposal of Burma, and those of Captain P C Gabbott, I M S, at disposal of Madras Government.

LIEUTENANT COLONEL K H MISTRI, I M S, returns to Thana as Civil Surgeon from temporary military employ.

CAPTAIN E W HOFF, I M S, Residency Surgeon in the Persian Gulf, having been granted nine months' furlough from 1st April 1901, Captain J W Grant, M B, I M S, is appointed to act in his stead.

MAJOR W G THOROLD, I M S, who some time ago acted as Sanitary Commissioner, N W P and Oudh and went on sick leave in April 1900, has been placed by the Secretary of State on the temporary half pay list, with effect from 15th April 1901.

AN Army Medical Officer writing in the *Civil and Military Gazette* (February 23rd) states that a scheme for remodelling the Army Hospital Corps is under consideration and suggests that the Indian Subordinate Medical Department should be amalgamated with the Army Hospital Corps, and the *Kahars* now attached to the Commissariat Department should be added. This Corps to be officered by the R A M C.

MAJOR S E. PRAYL, M B, I M S, is appointed Civil Surgeon of Adon, vice Lieutenant Colonel Anderson.

PORTRAITS of Dr Manson, Major R. Ross, Laveran and others appear in special "Malaria" number of *Practitioner*, March 1901.

THE degree LL D *honoris causa* has been conferred upon Major A W Alcock, I M S, by the University of Aberdeen.

SURGEON GENERAL R HARVEY's leave is gazetted from 15th March 1901.

LIEUTENANT COLONEL W KING, C I E, I M S, Sanitary Commissioner, Madras, has been granted leave, and Major A. E. Grant, I M S, acts for him.

CAPTAIN R H ELLIOTT, I M S, is granted three months' leave.

MAJOR MANHOLD, I M S, is Staff Surgeon, British Headquarters, China.

CAPTAIN A COCHRANE, F R C S, is appointed Superintendent, Punjab Lunatic Central Asylum, Lahore, vice Captain F Ewens, I M S, on sick leave.

CAPTAIN F O N MELL, I M S, acts as Civil Surgeon, Betul, C P.

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co, Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co, Calcutta.

Annual Subscriptions to the *Indian Medical Gazette* Rs 12 including postage.

LIST OF EXCHANGES.

The following is our revised list of exchanges. The British Medical Journal, The Lancet Medical Press and Circular, Journal of Tropical Medicine, The Medical Chronicle (Owens College), The Practitioner, Edinburgh Medical Journal, Dublin Journal of Medical Science, Bristol Medical-Chirurgical Journal, The Ophthalmic Review, The Medical Review, Treatment, United Service Gazette, The Polyclinic, The Glasgow Medical Journal, The Journal of Hygiene (Cambridge), The Journal of State Medicine, The American Journal of Medical Science, The Journal of the American Medical Association, The Boston Medical and Surgical Journal, The Philadelphia Medical Journal, The St. Louis Medical Journal, The Charlotte (N. C.) Medical Journal, The Brooklyn Medical Journal, The University Medical Magazine, The Australasian Medical Journal, The Intercolonial Medical Journal, The Indian Medical Record, The Dietetic and Hygienic Gazette, The Indian Medical Record, The Indian Lancet, The Therapeutic Gazette, Archiv für Schiffs- und Tropen Hygiene (Leipzig), Revista de Medicina Tropical (Cuba), Revue Internationale de Therapie Physique, Journal de Medicine de Bordeaux, Annuaire d'Ophthalmologie, La Medical Tribune, and Archives de Medicine Navale.

BOOKS, REPORTS, &c, RECEIVED.

Archives de Medicine Navale (now exchange).
Archives de Medicine et Chirurgie Speciales (now exchange).
Thorington on Refraction (Rebman, Lt).
Thorington on Retinoscopy (H. Kimpton and Co.).
Ophthalmic Surgery, Carter and Frost (Cassell and Co.).
Saunders Pocket Medical Formulary (H. Kimpton and Co.).
Materia Medica by W. Schlieff (Lea Brothers).
Diseases of Nose and Throat De H. Hall and Tiller (H. K. Lewis).
10s 6d.
Diseases of Ear, Throat, Eye, and Nose by Bullinger and Wipperfurth (H. Kimpton and Co.).
Ophthalmic Ocular Therapeutics Edited by Oliver (H. Kimpton and Co.).
Hansell and Hebers Muscular Anomalies of Eye (H. Kimpton and Co.).
Donder's Essay on Refraction Edited by Oliver (H. Kimpton and Co.).
Fetters of Malaria or Surra by Lt Col. R. W. Burke, A.V.D.
Formation of Urinary Stone (Reprint) by Reg. Harrison.
Statistics of Inoculation, by Major W. B. Bannerman, I M S.
The Bengal Administration Report, 1900-01.

COMMUNICATIONS RECEIVED FROM—

Lieut. Col. D. B. Spencer, I M S, China, Major H. Herbert, I M S, Bombay, Capt. O. Kinnear, I M S, Calcutta, Capt. Moll, I M S, Betul, Dr. Wanless, Miraj, Capt. Clouston Laing, I M S, Calcutta, Major O. G. Gorman, I M S, Lyallpur, Major A. Buchanan, I M S, Nagpur, Asst. Surgeon Gupta, Madhubani, Major Maynard, I M S, Patna, Capt. J. W. Cornwall, I M S, Madras, Capt. R. H. Elliott, I M S, Madras, Dr. C. E. Nove, Kashmir, Dr. Carroll, Etah, Major D. M. Molt, I M S, Calcutta, Capt. R. Bird, I M S, Calcutta, Capt. Henry Smith, I M S, Calcutta, Capt. R. Bird, I M S, Calcutta, Major W. B. Bannerman, Jullundur, Major A. O. Tate, I M S, Calcutta, Capt. A. Cochran, I M S, I M S, Bombay, Dr. O. Christy, Satara, Capt. A. Cochran, I M S, Lahore, Lieut. Col. G. M. Giles, I M S, Ferozepore, Lieut. Col. J. Maitland, I M S, Madras, Lieut. Col. W. K. Hatch, I M S, Bombay, Lieut. E. O. W. Greig, I M S, Madras, Major Thompson, I M S, Satara.

Original Articles.

THE OPERATION FOR THE REMOVAL OF ELEPHANTIASIS OF THE SCROTUM AND PENIS

BY J. MAITLAND, M.D., CM.,

LIEUT. COL., I.M.S.,

Professor of Surgery, Medical College, Madras

MAJOR CHARLES' interesting and instructive paper on the subject of elephantiasis, published in the March number of the *Indian Medical Gazette*, has supplied a want that has been felt by many surgeons new to the tropics and its diseases.

Beyond the curt descriptions of old-fashioned operations, still to be found in some English Text-books of Surgery, the novice in tropical surgery has no guide to the modern methods of dealing with elephantiasis of the genitalia. Even as late as 1900 the author of the article on "Surgery in the Tropics," in the *International Text-book of Surgery*, is far behind the times in his description of this operation.

The discussion of the subject having been thus opportunely started, it is to be hoped that other surgeons, who have experience of these operations, will publish descriptions of their respective methods of dealing with elephantoid tumours.

With this end in view I propose to describe in this paper the methods practised at the present time in the Madras General Hospital, but before doing so I think it desirable to point out that some of the methods of procedure described by Major Charles as being new, cannot fairly come under that designation. The plan of covering the testicles with skin from the thigh, described by him, has been carried out in the Madras hospital ever since the year 1893, and skin grafting of the penis since 1894.

Both of these procedures were described by me in a paper that was read before the Indian Medical Congress in 1894. With reference to this matter the following remarks, taken from the report of the surgical work of the Madras hospital in 1896, are of interest.

"In operative surgery the greatest change perhaps has been in the method of dealing with elephantiasis of the scrotum. In the years previous to the period under review (about fifteen years) no attempt was made to secure primary union, after removal of the scrotum, but the parts were allowed to heal by granulation and cicatrization, the result being that the cure was very prolonged, and the cicatrization resulted in great shrinking of the penis, which was reduced to an insignificant stump." "In the method now practised the testicles are

entirely covered with skin from the thigh, and the penis completely covered with grafts, so that the wounds heal almost entirely by first intention. The results of the improved methods are that the mortality after the operation has been reduced from 15 per cent to something under 4 per cent, and the patient, instead of



being detained in hospital for three months, are now discharged at the end of three weeks, with the wounds completely healed, and without any cicatricial contraction of the penis."

This report, which was written two years before Major Charles commenced his series of operations, shows that the most important of the methods which he advocates, are by no means new.

Selection of cases—The answer to the question, "in what circumstances is recourse to operation justifiable," depends chiefly upon the conditions present in each particular case. If the scrotum is not inconveniently large, and not increasing in size, and attacks of pain and fever absent, or infrequent, the operation may be deferred. When opposite conditions exist, an operation should be advised, provided there is nothing to contraindicate such a procedure. In deciding this point the surgeon must be guided by those general rules which are applicable to all operations of a major degree.

Special care should be directed to the examination of the urine, in cases occurring in India, where not only is diabetes extremely common, but where cases of intermittent glycosuria are not infrequently met with. Disease of the kidneys of necessity forbids operation, as do also enfeebled conditions of the system generally, unless arising from the disease itself.

The presence of an inguinal hernia does not necessarily forbid operation, but when the hernia is very large, and of old standing, and more especially when it is irreducible, the operation should not be undertaken, except as a matter of expediency. In other cases the hernia should be dealt with by a preliminary operation.

Should the patient, on first presenting himself be suffering from an abscess of the part, or sloughing of the scrotal tissue, these conditions must first be dealt with. The surgeon should on no account operate for the removal of the tumour until a healthy state of the parts has been induced. Probably few, if any, Surgeons have had an experience similar to Major Charles who has been able to operate upon every patient who has presented himself for treatment.

Preliminary treatment—The preliminary treatment is carried out on general principles no special measures being required. The cleaning of the skin of the part is often a difficulty, and daily scrubbing with soap and hot-water are necessary. During this period the urine should be examined daily.

The control of hemorrhage during operation—This is effected by means of rubber tubing, applied on the same lines as in McLeod's method, but with a very important modification. Two rings are fixed to the centre of the elastic cord as it lies over the sacrum. The ends of the cord after emerging from the ischio-rectal region, are passed through these rings before being brought round the sides of the pelvis. This modification, which is illustrated in the accompanying photograph, and which was introduced by Lieutenant-Colonel W B Browning in 1891, obviates any likelihood of the cord slipping. As a further precaution, two tapes are placed beneath the elastic cord, one on each side, as it crosses the pubes. If necessary, by pulling on these tapes, any tendency for the cord to slip over the edge of the wound can be prevented. McLeod advises that the cord should be brought round twice. This is not only unnecessary but should be avoided, because it renders the removal of the cord somewhat difficult. In operating upon very large tumours it is advisable to use two separate cords, in case one of them should break during the operation, an accident that has happened on several occasions.

Before the cord is applied the scrotum should be elevated for several minutes, and pressure applied by the palms of the hands so as to empty the large veins as far as possible. Esmarch's bandage should never be applied.

In cases where the scrotal tumour is comparatively small, the use of the elastic cord may be dispensed with. It is impossible to lay down any hard-and-fast rule as to when the cord should be used or not. In deciding this question, the surgeon should be guided, not only by the size of the tumour, but also by its shape. If it is small and easily manipulated, the cord is unnecessary, on the other hand, if its shape renders it difficult to manipulate, the cord should be used even if the tumour is comparatively small. In the case of tumours which are hard and of a pedunculated form the space between the scrotum and the thigh is so limited that the incision round the base has to be made in the dark. In such cases it is much better to use the cord.

Major Charles appears to have a strong prejudice against the use of the cord in these cases, and bases his objection on three grounds, namely, liability of the cord to slip, risk of contamination of the wound in removing the cord, and capillary oozing after the latter has been removed. The first of these accidents cannot occur if the cord is applied in the manner that has been described above. Contamination of the wound in removing the cord will not take place, if the latter has been sterilised, and if it has been applied in the proper way, its removal can be effected by an assistant of ordinary intelligence, without its coming in contact with the wound. The capillary oozing which follows the use of the cord is certainly an objection, but I have never found it a serious one, and such disadvantages as it entails, are more than compensated for by the advantage gained by its use.

Removal of the scrotum and skin of the penis—The most essential point for the surgeon to bear in mind in performing this operation is that there must be no half measures. The whole of the scrotum, the skin of the penis and the prepuce must be removed. The novice is often tempted to preserve portions of the scrotum or the skin of the penis, which present a healthy appearance, but if any of the tissues which are drained by the inguinal lymphatics are left behind, recurrence of the disease is more or less certain to occur.

In the olden days when partial operations were sometimes performed, it was not uncommon to see cases of recurrent disease. Such cases are rarely met with nowadays.

Major Charles advises that "should any small portion of the lining of the prepuce have been left behind, being healthy, let it be stitched to the tunica albuginea." This, I am sure, is wrong practice. The whole penis should be completely denuded, right up to the cervix.

As the operation, especially when the tumour is large, is a prolonged one, the surgeon should cultivate speed in operating, and should endeavour to limit loss of blood as much as possible.

In ordinary cases the best position is the so-called "lithotomy position," the scrotum hanging over the end of the table, which is duly guarded by disinfected towels. The feet, legs, thighs, and lower part of the abdomen are similarly protected by towels. In certain cases, as will be noted further on, it is better to keep the scrotal tumour resting upon the table.

In the Madras General Hospital two modes of removing the diseased parts are practised. My colleague Captain Niblock, I.M.S., in operating upon a case in which the tumour is of small size, makes a circular incision round the base of the scrotum and penis, and peels off the whole of the diseased tissue, in the same manner that a glove is removed from the hand, no longitudinal cuts being required. Personally I prefer the older method of operating.

The penis is first shelled out through a longitudinal incision carried along its dorsum. If, as is usually the case, the organ is embedded, the incision is made from the centre of the pubes to the orifice of the prepuce, and through this the penis can be dissected out with ease and rapidity.

Each testicle in turn is then shelled out through longitudinal incisions, extending from the external abdominal ring downwards for a sufficient distance. The upper ends of the three longitudinal incisions are then joined by cross cuts. Finally the testicles and penis being wrapped in a towel are held out of the way, and the diseased mass removed by a few rapid sweeps of the knife. During the latter stage of the operation, the Surgeon must be on his guard against injuring the urethra.

If the tumour is very heavy, and is hanging over the end of the table, the bulbous portion of the corpus cavernosum is dragged out of place, and is very apt to be divided unless the operator is on his guard. When the elastic cord is employed such an accident is easily avoided, if care be taken, but in operating without the cord, and when the parts are obscured by blood, it is, I should think, much more liable to happen.

In operating upon tumours of great size much difficulty is met with in manipulating the mass of thickened skin and blubber-like tissue. In such cases the tumour must be kept upon the table, instead of in the pendant position. In operating upon a case in which the tumour weighed 110 pounds, I found it necessary to sling the scrotum by means of large hooks to a pulley apparatus fixed to the roof. In this case the patient may literally be said to have been separated from the tumour. Lieutenant-Colonel W. R. Browne, I.M.S., formerly Senior Surgeon in the Madras Hospital, removed a tumour weighing 125 pounds. In this case also it was found necessary to sling the tumour.

If the elastic cord is not used, the surgeon picks up the arteries as they are divided,

clamping them and leaving them to be subsequently dealt with. When the cord is used the clamping of the vessels is left until the whole of the tumour is removed. All the large vessels are then secured with pressure forceps before the removal of the elastic cord. The arteries are finally dealt with either by torsion or ligature. Those which pull out easily, and these are the majority, are twisted, and the remainder tied.

The operation described by Major Charles appears to be a compromise between the two methods already described.

In operating upon cases in which the scrotum is only moderately enlarged, it is probably a matter of indifference which of these three methods is selected. Personally I prefer the older method, because it can be performed with much greater celerity, and I believe with less hæmorrhage.

In operating upon large tumours there can be no question as to the superiority of the older method, which can be carried out with much greater rapidity and ease.

In such cases the difficulty of manipulating the tumour renders the methods practised by Major Charles and Captain Niblock almost an impossibility. This is more especially the case in those tumours that have a narrow neck, below which the scrotum bulges out suddenly, so that the base cannot be seen, and can only be reached with great difficulty. It is possible that Major Charles' predilection in favour of the method he describes is due to the fact that the average weight of the tumours dealt with in his series of cases is only 5½ pounds, whereas the average in Captain Niblock's cases and my own has been nearly 10 pounds.

Apart from the considerations that I have mentioned, it must be remembered that as the elastic cord must be used in the case of all large tumours, the *raison d'être* of the operations performed by Major Charles and Captain Niblock no longer exists in those cases.

Formation of flaps—After all the arteries have been secured, the operator proceeds to form flaps to cover the testicles. The edge of the wound on one side, opposite to the centre of the perineum, is seized with a pair of forceps, and dissected up for about half an inch. By means of a finger introduced beneath the skin and superficial fascia, the latter is separated from the deep fascia to a sufficient distance in the outward direction, as well as upwards and downwards, the operation being aided if necessary by a few touches of the knife. The width of the portion of skin thus separated will depend upon the size of the testicle that has to be covered, usually two and-a-half to three inches suffices. A similar flap is then formed on the opposite side.

A small india-rubber drainage is next placed in the wound, and the thighs having been approximated, the flaps are brought over the testicles.

and united in the middle line by means of silk-worm gut sutures. One or two sutures are usually required in front of the penis, that is in the pubic part of the wound, and the sheath of the penis itself is fixed to the edges of the skin, which embrace it by a few sutures. This method of closing the wound is apparently identical with that described by Major Charles.

Skin grafting the penis—The final stage of the operation consists in the grafting of skin on the penis.

Strips of skin of the necessary length are cut from the outer side and front of the left thigh, the skin of which has previously been prepared for the purpose. The left thigh is selected in preference to the right, as it is much easier to cut grafts from the outside of the former, than that of the latter. The graft should be cut as thin as possible, so thin that little or no bleeding results from the operation. The number of grafts required depends upon their width, from two to four will usually suffice. These grafts having been carefully adjusted in position, the whole penis is covered with a piece of lint spread with boric acid ointment. The frayed edges of the lint are fixed to the skin of the pubes by means of collodion, and the whole secured by a piece of broad tape. Captain Niblock uses gutta-percha tissue in preference to boric acid ointment, which he considers liable to injure the vitality of the grafts. It is not evident from Major Charles' paper why he postpones the skin grafting to a later period. By grafting the penis at the first operation, not only is further operative procedure unnecessary, but the healing of the parts is much expedited, the healing of the penis being completed almost as soon as that of the remainder of the wound. If the skin grafting be postponed until the fifth day, the healing of the wound will be retarded to a corresponding degree. Moreover, the operation has much greater chance of success if the grafts are applied to a fresh raw surface than to surfaces covered with a layer of lymph five days old.

The dressings—Until comparatively recently I have been in the habit of fixing the dressings by means of the T bandage, but that method is decidedly inferior to the figure of 8 bandage, as used by Major Charles and also by Captain Niblock.

After-progress and results—The first change of dressings is made twenty-four or thirty-six hours after operation, for the purpose of removing the drainage tube.

No further change is required until the sixth or seventh day. Provided no complication arises, the patient is generally fit to be discharged by the twenty-first day, some on the eighteenth and nineteenth days.

The after-result of these cases is, I believe, excellent. Unfortunately very few native patients return to show themselves, but in those

that I have seen the result has been very good. Although the position of the testicles plastered against the perineum is at first somewhat embarrassing, yet in the course of time this rights itself, and a regular scrotum becomes developed. Recurrence is impossible provided the operation has been conducted on correct principles.

Mortality—There is no operation in surgery, of similar magnitude, in which the ratio of mortality is so low as it is in this case. Even when tumours of great size, one hundred pounds and more, are removed, the shock is comparatively slight, provided there has not been much loss of blood. The successful results obtained by Major Charles in his series of 143 cases show that when care and skill are exercised the risk of the operation is very small.

Captain Niblock in the Madras Hospital has also had excellent results, namely, 51 cases without any deaths. In my own cases, 125 in number, two deaths have occurred. One of these serves to illustrate the necessity of exercising extreme caution in conducting the examination of the urine in these cases. In this instance the urine had been examined on several occasions, and was said to be healthy, and this report was verified by my assistant. Operation was followed by symptoms of extreme and unaccountable depression, and death occurred on the second or third day. Before death the urine was found to contain a large quantity of sugar. In the second case the patient, who was an elderly and feeble man, succumbed to the effects of sloughing of the wound.

The statistics of the mortality after this operation are of extreme interest, as showing the progress of surgery within the last forty years. The first published statistics were those of the General Hospital, Calcutta, from 1859 to 1871, recorded by Sir Joseph Fayrer. This report included 193 operations with a mortality of 18.2 per cent, twenty-one cases dying from septic disease. A later report of the same hospital given by McLeod includes 129 operations with a mortality of 17.7 per cent. The records of the General Hospital, Madras, from 1870 to 1884 show 115 operations with a mortality of 14.78 per cent. In 1886 the mortality in Madras had fallen to 7.37 per cent. During the last five years the mortality has been still further reduced, the figures being as follows—170 cases with 4 deaths, giving a mortality of 2.3 per cent. It is improbable that the mortality will ever be reduced to a lower ratio than this.

THE FLAGELLAR FEVER IN MALIGNANT TERTIAN

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NEITHER Manson nor Celli nor any of the authors that we have seen, describe or mention anything regarding the fever that occurs about

the time that flagella are seen in malignant tertian cases

Before giving a description of this fever we shall give a short account of the circumstances under which the observations which led to the discovery of this flagellar fever were made. For some months a systematic examination of the blood of all the cases admitted into the Nagpur Central Jail Hospital has been made, and five high power microscopes have been in almost constant use from early morning to late at night. Several medical men and ladies have helped in these investigations, especially Colonel Quayle, M.S., Dr Agnes Henderson, Captain French, R.A.M.C., and Assistant-Surgeon Kane. Besides a number of intelligent Burman and a few Native prisoners have been trained to use the microscope, and they have become quite expert in detecting and distinguishing the various parasites.

While these observations were being carried on, there were several cases of quanta, benign tertian and malignant tertian fever as well as two cases of quotidian fever in Hospital. We propose to publish separately an account of these investigations, so at present we shall confine our remarks to the malignant tertian fever and chiefly to that part of the fever which we have not seen described elsewhere, viz, the flagellar fever.

Manson says in regard to crescents that "the crescent body does not begin to show itself till it approaches maturity, about a week after the first crop of amoeboid parasites associated with the paroxysm has appeared," and this we have verified in many cases, but as regards the exflagellation Manson says —

"In certain bloods exflagellation is easily procured, in others the opposite is the case. As regards the crescents, doubtless success depends in a measure on the degree of maturity of the parasite, young or effete crescents failing to evolve. There are other conditions affecting the process, however, which are as yet unknown."

The investigations which have been made here throw some new light on this point. While the investigations were being carried on a good many people (medical and non-medical) visited the Laboratory, and as we always tried to show them flagella we noticed that there was a certain stage when flagella could be found almost to a certainty. After the primary fever had disappeared there was an interval with low or only slight fever and then came a second rise of temperature, and when this fever comes on flagella can be found. We have not failed to find flagella in the blood of any case that has been examined during this period. This fever to which we have given the name of "Secondary" or "Flagellar" fever does not always occur, but even when it does not occur a few flagella will be found if the blood is carefully examined. If the temperature be high, more flagella will be found, if it be low, less will be found,

and if there be no fever, it may be difficult to find them. There is a distinct relationship between the amount of fever and the number of flagella to be seen, and therefore it would seem reasonable to consider that this fever is due to the flagellar bodies, and if it is, we have next to consider whether the fever may in any way be connected with the process of exflagellation. Now it has apparently hitherto been supposed that exflagellation takes place only without the body and after the blood has been drawn. There is no doubt that exflagellation is hastened by the withdrawal of blood from the body, but we have seen flagella bodies surrounded by phagocytes as soon as we could get the specimen under the microscope, and it is possible that the flagella may have been given out before the blood was drawn.

Manson speaking of the proneness to relapse in malignant tertian cases at page 66 says —

"After apparent recovery from the fever there is great proneness to relapse at more or less definite intervals of from 8 to 14 days."

It is important to distinguish between the secondary fever or flagellar fever, that has been described above, and a relapse. A relapse conveys the idea of a repetition of the process that occurs in the original fever. The relapse in enteric and in relapsing fever are apparently a repetition of the original process, but the flagellar fever is quite different from the primary fever, for in the first place the tertian nature of the fever is not so evident as it is in the primary fever, and there is more frequently a rise of temperature daily, though not always, while it lasts, and in the second place the examination of the blood shows that the parasites are in a very different condition from what they had been in the primary fever. In the primary fever we find the ring forms, but in the flagellar fever the ring forms are only seen in small numbers if seen at all. Then another great point of distinction is that at the end of the primary fever we find crescents, whereas at the end of the secondary fever we find that the crescents have to a great extent if not entirely disappeared. The crescent appears to be something like a chrysalis stage, during which the flagella are developed, in the same way as the legs and wings of a mosquito are developed during the time that it is coiled up in the form which the name 'nympha' is applied. Now if the crescents are numerous at the beginning of the flagellar fever, and if they are in small numbers at the end of it, if the degree of fever tallies with the number of flagella bodies to be seen in the blood, and certainly in the cases that we have examined, we have found that the higher the fever, the larger the number of flagella that will be seen, if we find flagella bodies in freshly drawn blood, then it would seem to indicate a strong probability at least that the exflagellation may occur in the blood.

before it is withdrawn from the human body, and to justify the introduction of the name which we have given to this particular stage of the fever, viz, the "Flagellar fever"

It is true as most authors say that we very rarely find exflagellated bodies in freshly drawn blood, but we have seen hundreds of times how the phagocytes have a special antipathy to the flagella bodies, and how they come swooping down from a considerable distance to envelop and destroy the flagella body as soon as it begins to throw out flagella, so if the phagocyte can thus by some marvellous instinct (if the expression may be used in such a sense) lay hold of the flagella body when it is placed at a disadvantage, by being pressed under the cover-glass, how much more likely is it that the phagocyte would be able to catch the flagella body when it is free in the blood? If then the flagella body is captured by the phagocyte before the blood is drawn, this may account for the fact that we seldom see exflagellated bodies in freshly drawn blood

It may be said that the phagocyte has a better opportunity of catching the flagella bodies when the blood is under the cover-glass, because the latter cannot move so easily as the former when they are in this position. The force of this argument must be admitted, and although we are not prepared to assert positively that exflagellation does take place within the body, still the arguments which have been given here, do seem to at least establish a probability that exflagellation may take place before the blood is drawn. At any rate we think that it is a point which deserves further consideration. Relapses do, however, occur at irregular intervals afterwards, and in these the ring forms are again found

It is with some hesitation that we have ventured to advance this view regarding the occurrence of exflagellation within the body, because it is opposed to the view which Manson and Celli apparently hold. Manson says—

"It is important to bear in mind that they are never seen in newly drawn blood, and that they come into view only after the slide has been mounted for some time—ten to thirty minutes, or even longer according to circumstances"

Manson's writings on malaria are crammed full of facts,—facts so numerous that after some months of constant observations we are astonished not only by their accuracy but by their number, so in venturing to disagree with so high an authority on this point we do so with some hesitation

It was on the 4th of January that one of the most intelligent of our observers, Kya Thoun, remarked that "you always find flagella in crescent cases when fever comes on". Since that time we have examined many cases in order to test the truth of this statement, and we have found that there are three periods in a typical malignant tertian chart, and that each of these

periods corresponds with a particular stage of the parasite

There is first the primary fever which may be a clear tertian—that is, with fever on alternate days only—or with fever on the intervening days also. After the first day or two, each successive paroxysm is less than the preceding one, so that if the highest temperatures are joined by a line, this line nearly always shows a "downward slope"—a marked contrast with untreated cases of benign tertian and quartan

2nd period —After the "downward slope" comes an interval of a few days, during which there is little or no fever, and then comes the

3rd period —The flagellar fever, which may have a tertian appearance, but is not as "clear" a tertian as the primary fever as a rule, for we nearly always find some fever on the intervening days

If we examine the parasites in these three stages we find in the

1st period —Rings

2nd period —a very marked diminution in the number of ring forms, the crescents gradually increasing, and at the end of it a few flagella bodies

In the 3rd period we find ring forms very rare, crescents at first numerous and increasing, then decreasing and disappearing, almost, if not entirely, flagella bodies increasing, decreasing, and finally disappearing

The primary fever is caused by the sexual sporulation of the rosette forms the interval occurs at the time when the crescents are maturing the secondary fever then comes on, and although it is contrary to the view held by Manson, Celli, Ross, Christy and others, still we believe that this part of the fever is caused by the breaking up of the crescents, or, in other words, that exflagellation does occur inside the body. We cannot examine the blood before it is drawn, and therefore we cannot see whether exflagellation does occur before the blood is drawn, but by examining the blood daily and noting the changes that occur we can draw inferences, and we would invite particular attention to the records of one case—the case of Narhai—and would ask whether any other reasonable explanation can be given for the alterations that occur, except the one which has been suggested here, viz, that ring forms change into crescents, and that crescents change into flagella bodies before the blood is drawn

In the table the results of the daily examinations are given, and in the chart the totals of the number of rings, crescents, &c., seen daily are entered. Allowance should be made for the fact that an equal length of time was not spent in examining the blood every day. The primary fever in this case is not typical for it does not show the downward slope

The chart has been divided into three periods corresponding to the primary fever, the crescent

forming interval, and the flagellar fever. If we further subdivide the third period into three subperiods, and then count the numbers of the different kinds of parasite seen in each period or subperiod we shall find the totals as follows —

Form of Parasites	1st	2nd	3rd		
	a	a	a	b	c
Ring forms	110	31	4	0	0
Crescents	0	37	131	39	3
Flagella bodies	0	11	79	59	12

There were no crescents or flagellar bodies in the first period, although 110 ring forms were found. Crescents appear in the second period and a few flagella bodies, but most of these were seen on the evening before the flagellar fever came on.

It is the third period to which special attention is invited. Note how the crescents soon begin to diminish in number, and note how in the first subperiod the crescents are nearly double the number of the flagellar bodies, while in the second subperiod the flagella bodies outnumber the crescents, and in the third subperiod the flagella bodies are four times as numerous as the crescents.

The crescents disappear—there will be a few remaining as there will be a few green stalks in a field of ripe corn—the flagella bodies also disappear,—but notice how the numbers in respect to each other alter—the crescents being at first in the majority, the flagella bodies being afterwards in the majority. Can any other reasonable explanation be offered to explain this change in numbers except the one which has been put forward now, *viz.*, that the crescents have been converted into flagella bodies before the blood had been drawn?

A phagocyte never attacks a crescent, and if the crescent is not converted into a flagella body, where does it disappear to, and how is it disposed of? A phagocyte attacks a flagella body in the most marvellous way can we believe that a cell which performs a function of this kind when the blood has been drawn has not got a similar function to perform while it is still within the body?

If we examine the record we find on the evening of the 1st March and the morning of the 2nd March that the number of flagella bodies was 12 plus 16, and the number of crescents seen in the same slides was 8 plus 5, so that 28 flagella bodies were seen while 13 crescents were counted. Up to the 1st March the crescents outnumbered the flagella bodies. We think it is a fair inference to draw that exflagellation was at its maximum on the evening or night of the 1st March. What was the

temperature on that evening? It was the highest during this part of the fever and why? Was it due to the breaking up of rosettes and the invasion of blood corpuscles by the spores? Or was it due to the exflagellation?

It is true that a small number of rosettes and ring forms were seen, but as we said above you always find a few green stalks in a ripe field of corn, it is also true that 150 flagella bodies were counted in the third stage, while only 4 ring forms were found, and that 110 ring forms were found in the primary fever, and not one flagella body was found. If the secondary fever was not due to some different process from that which took place in the primary fever, how can the alteration in the condition of the parasites which were observed be explained?

Had the statement, that exflagellation takes place only after the blood has been drawn, not been made by many high authorities, we think that the observations recorded above would carry conviction that exflagellation does take place inside the human body, but further evidence in favour of this view can be given from observations which have been made on sparrows' blood, and also from the records of observations which have been made by Stephens and Christophers in Lagos on the West Coast of Africa, but these will be considered later.

STRICTURE OF THE URETHRA ITS OPERATIVE TREATMENT AND GENERAL MANAGEMENT

(Lectures delivered at the Medical Graduates College,*
London, November 1900)

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PART I

GENTLEMEN,—I propose directing your attention to-day to stricture of the urethra. It is, perhaps, the most important of the surgical disorders of the genito-urinary organs. It is the most common of those diseases that you are called on to deal with in practice, since at one or other period of life the vast majority of the male population suffers from that condition which most frequently gives rise to it. If neglected or improperly treated it is the most far-reaching in its injurious consequences, though the morbid pathological changes thereby induced.

A detailed description of the anatomy of the urethra would be foreign to the scope of these lectures.

Stricture of the urethra, as its name implies, consists in an abnormal diminution of the calibre of the canal at some particular part, or,

* Sent for publication by author.

as in the quiescent state the urethral walls are in contact and the canal obliterated, perhaps it may be more logically defined as a condition by which the urethra is prevented from dilating to its natural capacity by the force of the urinary stream.

The older writers were in the habit of dividing strictures into three kinds—(1) *inflammatory*, (2) *spasmodic*, and (3) *organic*.

The former two being of a temporary character, there is a tendency amongst some modern writers, particularly in England, to restrict the term "stricture" to the third variety, which is of a permanent character. I consider the old classification a convenient one. Any condition of the urethra that causes even temporary retention or obstruction to the flow of urine, should not be lightly regarded.

Inflammatory stricture consists in a temporary narrowing of the urethral passage from inflammatory swelling of its walls, partially or wholly obstructing the flow of urine for the time being. It may be due to one of the following causes—(1) acute specific urethritis, (2) injury to the urethra caused by faulty passage of instruments, (3) swelling of the prostate, due to congestion or inflammation of this gland, and (4) it occurs in connection with organic stricture, on which from various causes it is often super-imposed.

Spasmodic stricture is the term applied to temporary contraction of the urethra, due to spasm of the muscular elements in and around its walls. It may manifest its presence in either of two ways, *viz*, by causing complete retention or diminution of the stream of urine, and by obstructing the passage of instruments into the bladder.

Retention from this cause may occur under the following circumstances—(1) after stretching the sphincter and preliminary to operations in or about the rectum, (2) following vasectomy or castration, (3) after operations on the kidneys, (4) in connection with catheterisation, (5) from injuries to the perineum, the urethra being uninjured, and (6) in patients suffering from organic stricture after exposure to cold and wet, or venereal excesses. Spasmodic contraction, as detected by the passage of an instrument, invariably occurs in the deep urethra, and is, as a rule, due to reflex irritation of the muscles induced by the presence of an organic stricture of large calibre in the anterior portion of the canal, generally close to the meatus. It is not uncommonly mistaken for organic stricture by the inexperienced surgeon, who fails to discover the real cause, *viz*, the stricture of wide calibre in the anterior part of the urethra. Reflex spasm impeding the introduction of instruments may also occur when stone or tumour of the bladder is present.

The inflammatory and spasmodic forms of stricture may co exist, in which case it will be

impossible to determine the amount of contraction due to each, and one or both may be super-imposed on the organic variety.

The immediate treatment of retention of urine arising from either of these causes is practically the same. It consists in clearing out the lower bowel at once by an enema, placing the patient in a hot bath, and giving opium by the mouth, or morphia hypodermically. Should these measures not suffice, a soft olivary catheter of medium size, 8 or 9 of the English scale, should be passed slowly and gently, or a silver catheter if necessary. If there be any difficulty in introducing the catheter, the patient should be anaesthetised, when the spasmodic element will entirely disappear, and the instrument, as a rule, pass readily.

Organic stricture may be defined as a permanent diminution in the calibre of the urethra, due to the development of organised lymph or scar tissue in its walls.

The most common cause of this condition is gonorrhoea, and particularly repeated attacks of this disease, followed by persistent and long-continued gleet. In the inflammatory stage plastic lymph is deposited in the mucous and sub-mucous tissues, and may invade the corpus spongiosum. If this lymph is not absorbed, as it generally is, it organises and has a tendency to slowly contract, forming indurated masses which narrow and distort the passage, and fibrous bands which partially or completely encircle the canal. This fibrous band almost invariably encircles the urethra in its entire circumference. As a rule, it projects equally from all aspects of the canal, but is sometimes thinner in one direction than another. The mucous surface may remain entire, but the friction caused by the urinary stream keeps up irritation and may cause excoriation and ulceration at the seat of stricture, with fresh deposits of plastic lymph.

Injuries of the perineum, such as a kick, blow, or fall astride a fence or railing are followed by the most intractable form of stricture—the *traumatic*. This cause operates most frequently in the bulbo-membranous junction, the urethra being bruised between the impinging body and the pubic arch.

Other causes of stricture are cicatrices resulting from chancre at the meatus, or in the first half inch or so of the tube, tuberculous ulcer, urethral abscess, injuries resulting from unskilful catheterisation, laceration of the urethra by a calculus in its exit, rupture of a choirdee, and the use of strong urethral injections.

The urethra may also be strictured congenitally. This is rare, but I have met with a few instances. I do not refer to congenital narrowing of the meatus, which is not uncommon.

Stricture is most commonly met with between the ages of twenty-five and forty-five. This is, of course, due to the fact that gonorrhoea, its

chief cause, occurs most frequently during the early years after puberty is reached, and that, as a rule, at least three or four years elapse before the stricture makes itself felt to such an extent that recourse to the surgeon is found necessary. It may, however, occur at any age as a result of one or other of the causes already indicated. I have seen stricture in children caused by injury of the perineum, and laceration of the urethra due to passage of stone.

There are certain technical terms, which have the sanction of time and general usage, applied to strictures, according to their physical conformation or clinical features. Thus "linear" or "bridle" stricture is the term employed when thin membranous septa or narrow bands extend across the canal and partially occlude it. "Annular" stricture consists of a narrow band of tissue completely encircling the canal, the contraction being such as would be produced by tying a string round the urethra. "Ribbon" stricture resembles the latter except that it is broader. The "tortuous" variety involves a considerable extent of the urethra which is irregularly contracted, being narrower at certain points than at others, with the result that the passage through this part of the canal is distorted.

Then, clinically, we have the following varieties—"simple," where the stricture is readily dilatable by instruments, "resilient," having a tendency to rapidly re-contract, "irritable," when painful and liable to bleed on instrumentation, "indurated," when the scar tissue is very hard, and "impassable," when the surgeon fails to pass an instrument through the opening.

The older English surgical writers, from Sir Everard Home to Sir Henry Thompson, held that stricture was most commonly located at the junction of the bulbous and membranous portions of the urethra. This tenet has in recent years been called in question, particularly by the American surgeons, headed by Otis. The latter considers that he has demonstrated by the urethrometer that stricture is much more common in the penile than in the deep urethra.

This diversity of opinion appears to me to be due to the different standards adopted as to what constitutes stricture, the American surgeons regarding as stricture any contraction of the canal, no matter how slight—even congenital narrowing of the meatus—provided it gives rise to pathological disturbances from the obstruction and friction caused thereby to the urinary flow. Judged by this standard it is possible that the anterior portion of the canal may be most frequently affected. But after an experience of many thousands of cases I have no hesitation in saying that pronounced organic stricture requiring instrumental or operative interference is overwhelmingly most common at the bulbo-membranous junction, an experience entirely borne out by an examination of the pathological specimens in the museums.

The proneness to the occurrence of stricture at this situation is attributed to the facility with which discharges lodge in the dilated bulbous portion of the urethra, thus keeping up chronic urethritis with consequent inflammatory thickening or ulceration of the mucous membrane long after gonorrhoea has run its course in the penile portion.

The only kind of stricture known to occur in the prostatic portion of the urethra is the *traumatic*.

Stricture may be single or multiple. The latter is most common. It will be found, as a rule, that a tight stricture in the deep urethra is accompanied by one or more contractions of large calibre in the penile portion of the canal.

Symptoms of Stricture

We now come to the symptoms of organic stricture, which are as follows—

1 There is diminution in the size of the stream. This has been coming on gradually for some time, possibly for years, till eventually the stream has become, perhaps, extremely small, or only a few drops of urine may be passed at a time.

2 As a consequence the patient notices that he spends more time over the act of micturition than he formerly did.

3 The stream is probably forked, flattened, or twisted like a cork-screw. This, however, is a symptom to which too much importance must not be attached, as it may occur in persons free from stricture, owing to some peculiar conformation of the meatus, either congenital or acquired from thickening of its lips from chronic inflammation.

4 Micturition may be accompanied by a good deal of straining to impel the urine through the narrowed passage, and particularly to get rid of the last few drops.

5 There may be dribbling of urine at the end of micturition, when the penis is allowed to hang down, so that the trousers get wet. This may be due either to atony of the bladder, in cases of long standing, with inability to completely empty the viscus, or to inefficient contraction of the *accelerator urinae* and *compressor urethrae* muscles, one of the functions of which is to expel the final drops of urine from the deep portion of the canal.

6 Increased frequency of micturition is one of the earliest symptoms. This may be due to reflex irritation of the neck of the bladder caused by the stricture, or to local cystitis caused by decomposition of urine that remains in the urethra behind the stricture.

7 There is frequently pain, usually of a scalding or burning character, *during* the act of micturition, felt as a rule at the seat of the stricture, contrasting with pain felt *after* the act when stone in the bladder exists, and *before* the act when due to prostatic enlargement. When cystitis co-exists there will be dull, aching pain.

above the pubes, particularly when the bladder gets at all distended with urine

8 Gleet discharge is a common accompaniment of stricture, and may be the first symptom that arouses the suspicion of the surgeon as to its existence. In all cases of long-standing gleet the presence of stricture should be suspected and searched for. The mucoid or muco-purulent discharge is due to granular patches or ulceration in the vicinity of the stricture.

9 When this symptom is present copulation with a healthy female may excite a temporary urethritis resembling a fresh attack of gonorrhoea, for which it may be mistaken, especially after illicit intercourse.

10 There is sometimes a peculiar sensation of a creeping, crawling, or fluttering character felt in the urethra when stricture is present.

11. There may be pain of a scalding character in copulation during the emission of semen, and a few drops of blood may pass immediately after the act. In cases of tight stricture there may be no emission of semen, which is forced back into the bladder, and flows away when the penis becomes flaccid, or with the urine in the next act of micturition. Sterility may thus result.

12 There may be nocturnal emissions from reflex irritation. Partial or complete impotency may result from the enervating influence of the disease. And in some few instances excessive desire or even priapism may be induced by the reflex irritation of the stricture on the nerve-centre governing the sexual passions.

13 Sudden retention of urine may be the first symptom that attracts attention to the presence of stricture. This is always liable to occur as a result of chill, sexual excess or errors in eating and drinking, causing congestion of the already narrowed canal, thus temporarily closing it up.

14 A peculiar train of neurotic symptoms is not unfrequently noticed, and, strange to say, these mostly occur in connection with strictures of large calibre. Neuralgic pains in the back and loins, the groins, spermatic cords, testicles, perineum, rectum, and lower limbs occur, frequently giving rise to malaise, nervous irritability, and mental depression—symptoms which disappear when the stricture is successfully dealt with.

With some or all of the above symptoms there will probably be a history of one or more attacks of gonorrhoea some years before, or of an injury to the perineum accompanied by passing of blood from the urethra.

These, then, are the ordinary symptoms of organic stricture. You will rarely find them all present in any particular case. A combination of a certain number of them will lead you to suspect the presence of this disease.

In cases of long standing, however, extensive pathological changes occur in the urinary tract behind the seat of the contraction. These

conditions are attended by symptoms that will give an additional clue to the primary cause of the mischief.

(To be continued)

TETANUS PUERPERALIS

BY KEDARNATH DAS, M.D.

Teacher of Midwifery, Campbell Medical School

THE rarity of this terrible and almost fatal complication of the puerperal state, warrants publication of the following successful case. Tetanus is known almost from time immemorial and has been studied by scientific men of all ages, but it is only since the discovery of the specific bacillus by Nicolaier in 1884 that its study has received a scientific foundation. At the present day we must define tetanus as "an acute infectious disease which is *invariably* and *indubitably* caused by the entrance into the system, of the specific micro-organism—the *Bacillus Tetani* of Nicolaier and first cultivated in pure culture by Kitasato in 1891 in an anaerobic medium." In the present light of bacteriology and animal experiments there is certainly no place in the description of a given case of tetanus for the diagnosis "idiopathic" or "rheumatic." The only interpretation that can be put is, that in these cases the point of infection has not been well searched for or found. The so-called varieties only indicate the seat of infection—the "puerperal" variety thus indicating, that a breach in the parturient tract is the point of infection.

Batasia, a Hindu female, aged twenty eight, of Shib Thakoor's Lane, Calcutta, was delivered of a full term child on 20th July, 1900. The child had trismus neonatorum on the tenth day and died within twenty four hours. The mother had lock jaw and stiffness of neck since 30th July, 1900. She was admitted into the Campbell Hospital on 3rd August, 1900, when she had well marked symptoms of tetanus—opisthotonus, jaw completely locked, spasms very frequent, constipation, pulse, 120 small and compressible, temperature 100.2°F. She was at once given an intra uterine douche of hydrarg perchloride lotion (1/2,000), and ordinary soap water enema, followed by an enema of chloral hydrate grs 40 and calomel grs 5 on the tongue. She was subsequently kept under the influence of chloral, giving the drug per mouth or rectum. Occasionally she had to be given very large doses of it, and during one night she had three enemata of 40 grains each. During the course of the illness, she was given apomorphia four or five times, hypodermically, in addition to chloral per rectum when she could not take medicine by the mouth. I also had recourse to intra-cellular injection of normal saline solution (under the breasts), several times during the course of the illness with a view to help elimination of the toxins. The spasms did not completely abate till 18th September, 1900, i.e., six weeks after admission. The bowels were kept well open. Plenty of liquid food given regularly. The total quantity of chloral used was eight ounces, six drams and ten grains. She had in addition much KBr and a quantity of Tinct Cannabis Indica.

The prognosis is very grave. The average mortality of tetanus taking all the so-called varieties together (as given in English text-books) is between 80—90 per cent. Garriques has collected fifty-seven cases of puerperal tetanus, and the mortality is put down between 84—92 per cent. (Vide "*American Journal of Obstetrics*," 1882)

I have been able to collect sixty-eight cases from literature, a tabulated list of which is given below. In compiling this, I have excluded all cases in which there has been any doubt with regard to diagnosis. Of these sixty-eight cases, only five recovered, giving a mortality of 92 per cent. The cases can be sub-divided into three groups. In the first group (*ie*, cases 1—43) we have cases collected from English text-books and periodicals. Of the forty-three cases, three recovered or a mortality of 93 per cent. In the second group (*ie*, cases 44—64) we have cases treated with antitoxin given either subcutaneously or by intra-cerebral injection. Of these twenty-one, one only recovered (treated with intra-cerebral injection + chloral + morphia) or a mortality of 95 per cent. In the third group (*ie*, cases 65—68) we have Indian cases collected from the *Indian Medical Gazette* of the last thirty-five years. Only four cases of unmistakable puerperal tetanus have been found, with one recovery, or a mortality of 75 per cent. It may thus be seen that even with the best modern treatment, the mortality of puerperal tetanus is appalling. It must, however, be remarked that the Indian cases seem to yield to treatment better than the other cases.

With regard to rational treatment of this affection, we must look to the following points: (1) To destroy the bacteria at the seat of infection, by thoroughly anti-septicising the parturient canal and subsequently keeping it aseptic. (2) To eliminate the toxins already absorbed by brisk purgation and intra-cellular injection (under the breasts) of normal saline solution. (3) To overcome the symptoms induced by the action of toxins, *viz*, the increased reflex irritability of the higher nerve centres, and this is best accomplished by keeping the patient absolutely quietly in an isolated place and by chloral, in very big doses, given either *per os* if possible or *per anum* or hypodermic injection of apomorphia, hyoscyne hydrobromate or morphia. (4) To neutralize the poison already absorbed and to immunize the body after local infection has taken place. Both of these indications ought theoretically to be met by the injection of the serum of immunised animals. But the mode of action of the antitoxin has not yet been acceptably explained. Moschcowitz in his masterly contribution on the antitoxin treatment of tetanus published in the *Annals of Surgery* of August, September and October 1900, gives no very decided opinion with regard to the neu-

tralizing effect of antitoxin, after a careful analysis of 358 cases.

Anti-toxin treatment, he says, appears to have a distinctly beneficial influence on the course of tetanus, and the statistics he has collected, show that with this treatment, the general mortality of tetanus has been reduced from 90 to 40 per cent. But the puerperal cases, taken separately, show *no improvement* in the percentage of recoveries. With regard to the question of immunizing the body, after local infection has taken place, involves the injection of anti-toxin as a prophylactic measure, in all wounds when there is reason to suspect the possibility of the subsequent development of tetanus. By such treatment it is asserted, an extensive epidemic of puerperal tetanus in a lying-in hospital at Piauque was cut short, and numerous instances of good results from a similar course have been recorded in veterinary practice.

List of cases collected from medical literature

Reporter's Name	Abortion, prem labor or labor at term	No of days after which symptoms appeared	Duration of disease	R. suit	Treatment
1 Dr Alexan der Wood	Abortion	6	3	D	Turpentine, tobacco, Indian hemp, &c
2 Dr Malcolm	Do	15	3	D	
3 Dr Hislop	Do	6	3	D	Opium and croton oil
4 Dr Symonds	Do	7	3	D	
5 Velpeau	Do	(?)	(?)	D	
6 Dr Ritchie	Do	11	6	D	Laudanum and croton oil
7 Dr Adams	Do	7	3	D	
8 Dr Lyell	Labor	5	5	D	Opium, venesection, turpentine
9 Dr Lever	Do	3	3	D	Ditto
10 Dr Mackinlay	Do	30	3	D	Secondary hemorrhage, 24 days after labor
11 Dr Stover	Do	6	2	D	
12 Dr Aubinais	Do	3	7	D	
13 Do	Do	4		R	Bled 6 times, 100 leeches, Musk, valerian
14 Do	Prem labor	4	40	R	
15 Mr Colles	Labor	15	2	D	
16 Dr Christie	Do	2		D	Hg opium Warm bath
17 Mr Dickin son	Do		5	D	Ditto
18 Mr Finu cane	Do	5	1	D	
19 Prof Dubois	Do	13	3	D	(Caesarian Section)
20 Prof Lawrie	Abortion	10	(?)	D	C H C L S
21 Dr Black sham	Do	9	5	D	
22 Dr Philip son	Labor	9	5	D	
23 Dr Denham	Abortion			D	
24 Do	Ditto			D	
25 Do	Ditto			D	

Reporter's Name	Abortion, prem labor or labor at term	No of days after which symptoms appeared	Duration of disease	Result.	Treatment
26 Dr Denham	Labor			D	
27 Dr Keeling	Do	10	8	D	
28 Dr Wiltshire	Abortion	-		D	
29 Do	Do			D	
30 Dr Bennington	Labor	6	1	D	
31 Dr Dill	Abortion	10	72	R	
32 Dr McLaren	Do	10	4	D	Laudanum Blister to spine
33 Dr McGregor	Do	7	1	D	
34 Dr Gordon	Do	9	8	D	Mustard poultices Opium and calomel H S
35 Do	Do	4	1	D	Dover's powder, calomel, tobacco
36 Do	Do	5	8	D	Belladonna and lobelia
37 Dr Craig	Labor	9	2	D	Tinct Cannab Ind
38 Dr Arnold	Abortion	11		D	
39 Dr Werner	Do	-		D	
40 Do	Labor			D	
41 Dr Viant	Do	5	2	D	CHCl ₃ , castor oil and opium
42 Dr Netzel	Do	7	1	D	Chloral morphia
43 Dr Peacock	Do	7	4	D	Ditto
44 Do	Ditto	9		D	Anti toxin
45 McEwan	Abortion	7		D	Anti toxin and chloral
46 Blumenthal	Labor	7		D	Ditto
47 Merkel	Abortion			D	Anti toxin
48 Do	Do			D	Ditto
49 Rubeska	Do	9	9	D	Ditto
50 Do	Labor	19		D	Ditto
51 Pitha	Do	8		D	Anti toxin, chloral and anaesthesia
52 Do	Do	8		D	Ditto
53 Do	Do	8		D	Anti toxin
54 Do	Do	8		D	Ditto
55 Do	Do	6		D	Ditto
56 Kranz	Do	7		D	Anti toxin, urethan and morphine
57 Do	Do	9		D	Anti toxin
58 Do	Do	6		D	Anti toxin and urethan
59 Do	Do	10		D	Anti toxin
60 Leyden	Do	10		R	Anti toxin (intra cerebral), chloral and morphia
61 Pitha	Do	5		D	Anti toxin (intra cerebral) and morphia
62 Do	Abortion	9		D	Ditto
63 Do	Labor	9		D	Ditto
64 Do	Do	5		D	Anti toxin and chloral
65 R N Roy	Abortion	6	3	D	
66 Do	Labor	4	1	D	
67 Mallik	Do	15		R	Chloral 13½ drams
68 Mootoosamy	Do	5	4	D	

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TRANSPPOSITION OF VISCERA

By D M MOIR, A.M., M.D.,

MAJOR, I M S

Offg Profr of Anatomy, Medical College, Calcutta

IN the November issue of the *Indian Medical Gazette* Major J K Close, I.M.S., described the dissection of a male adult, about 40 years of age, in whom he found the viscera completely transposed. Last August Assistant-Surgeon Bhaia Chandra Dhai drew my attention to the following case at the out-patient department of the General Hospital, Chittagong—

H. R., *et* 22, Mahomedan student. Heart on the right side of the chest, apex beat $2\frac{1}{2}$ " to the right of the middle line, $1\frac{1}{2}$ " below and $1\frac{1}{2}$ " internal to the right nipple. Percussion area and cardiac sounds absent in their usual sites on the left side of the chest, present and normal on the right side. Abdominal aorta and its bifurcation to the right of the vertebral column. Radial pulse full and strong at the left wrist, small and faint in the other limb. Associated with this there was an absence of the right thenar eminence, due to congenital maldevelopment of the abductor, adductor, opponens, and flexor brevis pollicis. He is right-handed man.

Spleen on the right side, greatly enlarged in August, 1900, extending almost to the middle line and down to the level of 2" above the umbilicus, notch quite distinct, in December, 1900, much decreased in size, but still enlarged to $2\frac{1}{2}$ " below the costal arch, and the notch can just be made out.

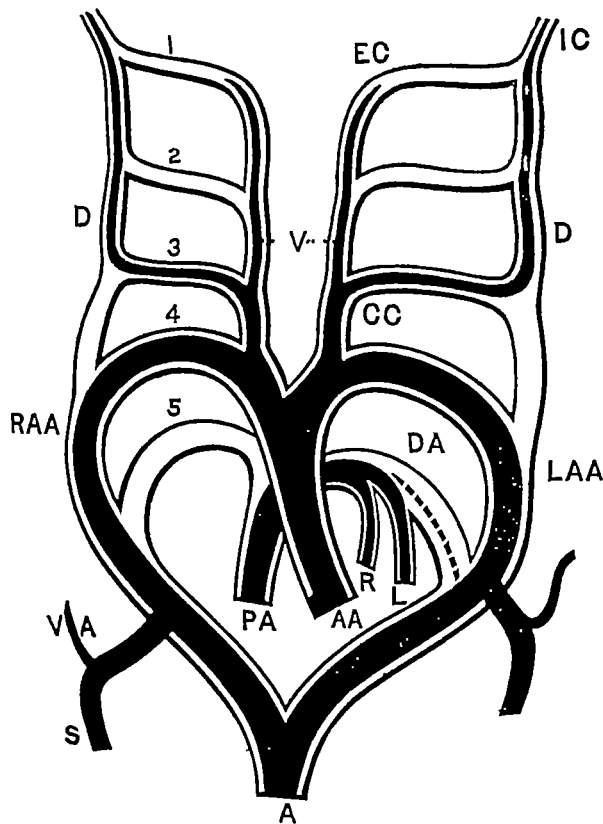
Stomach, percussion note entirely to the right of the middle line.

Liver on the left side, extending from the nipple to the costal arch, $3\frac{1}{2}$ " of superficial dulness, and 5" total hepatic dulness.

The only other abnormality or defect observed was a low degree of myopic astigmatism. Otherwise he appeared a well developed young adult, 5 $7\frac{3}{4}$ " in height, with $31\frac{1}{2}$ " of chest measurement. Hitherto he had been quite unaware of anything unusual in his visceral arrangements, and had indulged in physical exercise like other lads. He came to hospital to be treated for liver disease as he supposed, because various

native practitioners had previously been treating his abnormally situated spleen as an enlargement of the liver

The experience of teratologists shows us that congenital aberrations are frequently multiple, therefore it is less surprising to find the apparently capricious association of a small radial artery and absence of a thenar eminence along with transposition of viscera. According to Ballantyne, probably the foremost living British teratologist, the condition of *situs transversus* (or *inversus*) *viscerum* is a pathological event during the post-conceptional period of germinal life, it is due to an elliptical deformity of the blastoderm and vascular area. Heterotaxy of the abdominal viscera alone is a much rarer condition than heterotaxy of the contents of both the thorax and abdomen. In fact, this right-and-left reversal of the thoracic and abdominal viscera is probably not so rare as is usually supposed. Personally I have come across four cases during the last seventeen years, two were dissections, and two were in living subjects.



- 1 to 5 — the five pairs of vascular arches
 V — the two ventral aortic roots
 D D — the two dorsal aortic roots
 C C — the common carotid
 E C — the external carotid
 I C — the internal carotid
 A A and P A — the parts of the truncus communis which develop into the ascending aorta and pulmonary artery
 R and L — the right and left pulmonary arteries
 D A — the ductus arteriosus
 R A A — the right aortic arch
 L A A — the left aortic arch
 A — the descending aorta
 V A — the vertebral artery
 S — the subclavian artery

1. The first case was the body of an adult male European in the Edinburgh University dissecting rooms about the year 1883

2. The second case was that of a still-born, agnathous, hydrocephalic infant that I delivered at the Royal Maternity Hospital, Edinburgh, early in 1886

3. The third case was at St Andrew's in 1887. He was an adult male European, who used to earn a somewhat precarious livelihood by exhibiting himself at various medical schools and societies, and in the consulting rooms of private practitioners

4. The fourth case is that of the young Bengali Mahomedan now under report in the latter part of 1900

The manner of origin of a right-sided heart and aorta is explicable by a reference to comparative anatomy and embryology

This diagram, by Professor Sir W. Turner, illustrates the formation of a double aortic arch through the persistence of both the fourth vascular arches and the adjacent dorsal aortic roots. It obtains in the Reptilia, and a few cases have been observed in man. Higher in the vertebrate scale we find a right aorta in the Birds, arching above the right bronchus, and developed from the fourth right vascular arch and dorsal aortic root. This Avian type is occasionally reproduced in man, as in the cases under discussion. In the Mammalia we have the human type of a left aorta arching over the root of the left lung, and developed from the fourth left vascular arch and corresponding dorsal aortic root. Thus it is obvious that these cases of a right-sided heart and aorta are simply a reversion to the Avian type

INTESTINAL PARASITES

By O R M GREEN, F.R.S.,

MAJOR, I.M.S.,

Civil Surgeon of Mozufferpur

(For the I M G Collective Investigation)

In the October number of the *Indian Medical Gazette* of 1900, Major Calvert gave a note on the prevalence of round worms amongst the inhabitants of the Daibhanga District Jail. It may be of interest to give the result of a similar inquiry that I made in the adjoining District Jail of Mozufferpore. I have examined the stools of 108 prisoners newly admitted into the jail, by placing small portions of the stools on a cover-glass and examining under the microscope. The result are much the same as those obtained by Major Calvert.

I found the ova of entozoa present in 69.44 per cent. Major Calvert gives 62.67 per cent. Of those affected 29.3 per cent had more than one kind of ovum present in the stool.

The ova of round worms were found in 55.5 per cent of the prisoners' stools. Major Calvert found them in 53.33 per cent. Thread-worms in 18.5 per cent, whip worms in 15.7 per cent, *anchylostoma duodenale* in 5.5 per cent, and *tænia-solium* in not quite 1 per cent (0.92 per cent).

Of the 75 prisoners in whose stools ova were found, 62 were noted to be in "good" health on admission, eleven in indifferent health, and two in bad health.

When ova of round worms were found in a prisoner's stool, he was treated with *santonine*. The largest number of round worms passed by any one prisoner after treatment was 37. This man was entered as in good health. Many prisoners passed more than ten.

In eleven *post-mortem* examinations made on the bodies of prisoners, who had died in the Mozufferpore Jail, I found worms present in seven cases or 63.6 per cent. Round worms were present in 36.3 per cent, and *anchylostomes* in 45.3 per cent.

In the case of a prisoner who had died of cholera in the jail, although no worms were passed during life, either by vomiting or purging, 226 round worms were found at the *post-mortem* examination in the stomach and intestines. In fact parts of the ileum were almost solid with worms.

In ten bodies sent by the police for *post-mortem* examination, intestinal parasites were present in 40 per cent, round worms in 30 per cent, and *anchylostomes* in 30 per cent.

The reason that *anchylostomes* were present in the stools of prisoners in only 5.5 per cent, while on *post-mortem* examination 45.3 per cent were found, is probably due to the fact that when the *anchylostomes* are few in number, their ova are not easily found in the stools, and hence they were present in a larger proportion of prisoners than 5.5 per cent.

The *anchylostoma duodenale* was never numerous in the bodies examined *post-mortem*. The largest number noted was sixteen, but there may have been a few more as they are difficult to find and are easily overlooked.

At the *post-mortem* examination the proportion of round worms found in jail bodies was 36.3 per cent, while 55.5 per cent were found in the stools during life. This diminution was probably due to a proportion of the worms being expelled during life by treatment.

I have not the slightest doubt that when prisoners are diseased, and *entozoa* multiply in their intestines, their presence exercises a very prejudicial influence on the course of the case. The large proportion of cases in which they are present should always be borne in mind and anthelmintics administered.

On the other hand, a healthy prisoner may have a few round worms, or *anchylostomes* present without suffering in health, though the abrasions

they cause are a standing danger, and in case of disease a vicious circle is soon established. H. A. Nazim Hossain has taken a keen interest in the investigation and given me willing assistance.

THE EFFECTS OF LIME JUICE ON MALARIAL FEVER

By O. O. MURISON,

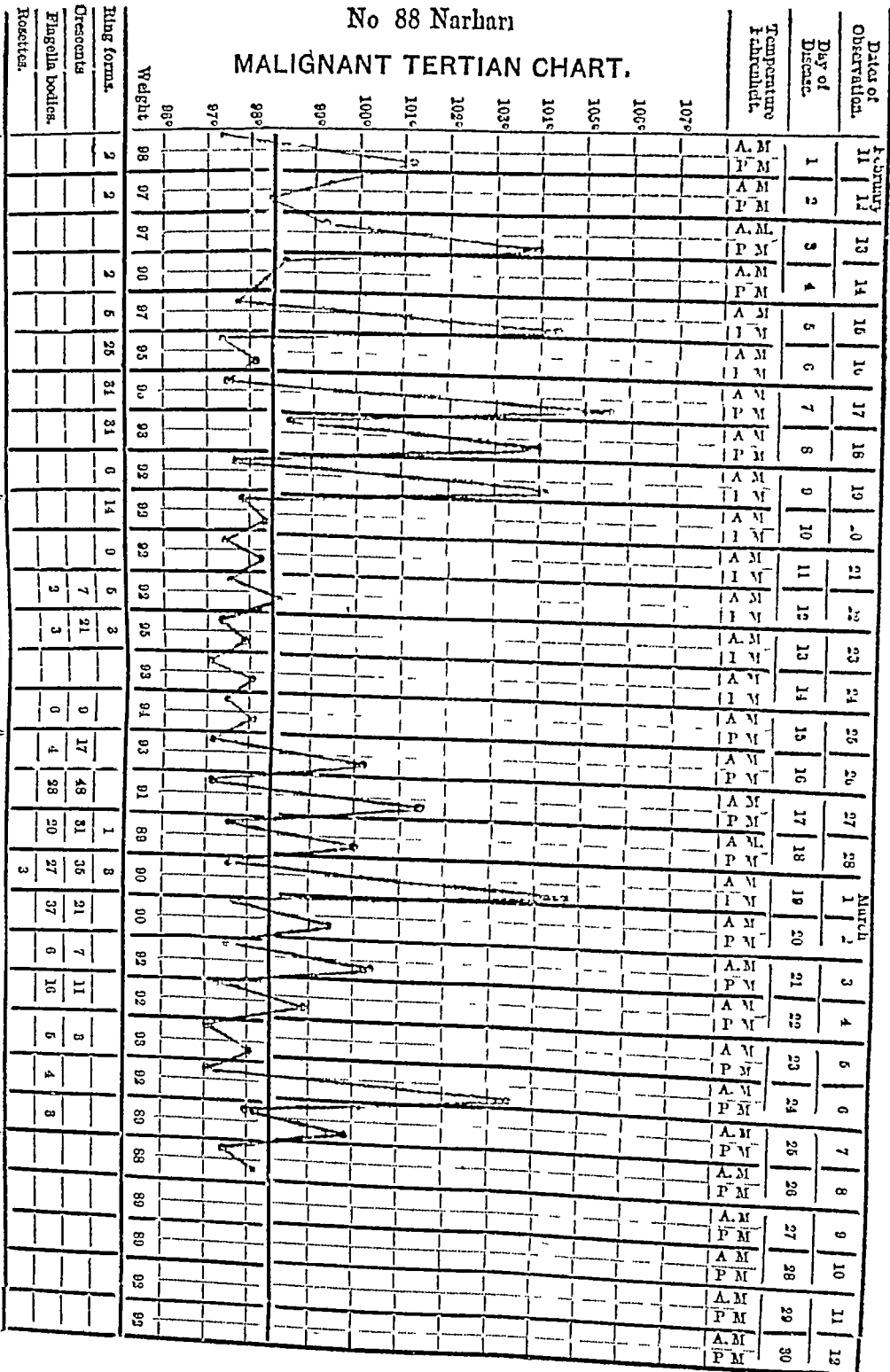
LIEUTENANT, I. M. S.

The effects of lime juice on malarial fever came under my notice in a very remarkable way. I had a patient (Case I) in hospital with quotidian fever. From his chart it could be seen that his temperature used to go up to about 102°F in the evenings and down to normal in the mornings. On the 9th October (24 days after admission) he complained of his gums being tender, which on examination showed a few reddish patches. Two days later (11th October), he again complained of his gums being tender and also stated that his teeth had a peculiar feeling in them. On examining his gums, I found them to be somewhat swollen and of a reddish colour. His teeth were not loose, but the incisors were tender to the touch. I suspected this condition to be the beginning of scurvy and, therefore, ordered one ounce of lime juice to be given him daily. On the 15th October (four days after commencing the lime juice), his evening temperature only went up as high as 100.3°F, and from the next day (16th) his temperature, both morning and evening, was about normal. The scurvy gradually got better. I now began to wonder if there was any connection between the giving of the lime juice and the stoppage of the fever. I had three other bad cases of ague in hospital to whom I ordered lime juice to be given, with the result that the temperature in all these three cases became normal in from three to six days after starting the lime juice. This result made me believe that lime juice did have some effect in stopping the fever.

Case No. II—Also helps to show in another way that lime juice has a beneficial effect in fever. This patient was ordered lime juice on the 17th October (fifteen days after admission), and on the 20th October his temperature became normal. On the 24th October, as an experimental measure, I stopped the lime juice, and on the evening of the 26th October his temperature went up to 99.6°F, and the next day to 101°F, and the next day to 101.9°F. On the 29th October I re-ordered the lime juice, and from the 31st October his temperature remained about normal. On the 24th October I stopped the lime juice of another patient whose temperature I consider had been kept normal by it. No change in his temperature, however, took place subsequently.

No 88 Narhari

MALIGNANT TERTIAN CHART.



No. 88 Narhari

Date.	Number of specimen	Hour when blood drawn	Temperature	Ring forms,	Rosettes	Crescents	Flagella bodies	Date	Number of specimen	Hour when blood drawn	Temperature	Ring forms	Rosettes	Crescents	Flagella bodies
16 2 01	1	12 30 p m	95 0	25				26 2 01	1 2	8 8 a m 9 30	97 6 97 0			5 12	4
17-2 01	1 2 3 4 5 6	4 30 p m 4 36 5 10 6 10 6 40 7 11	105 8 105 8 105 0 104 0 103 4 103 4	14 2 4 3 8 3				27 2 01	1 2 3	11 a. m 1 20 p m 2 25	98 99 101 6			8 23 17	8 13 7
				34										48	28
18 2 01	1 2 3 4 5 6 7 8	9 15 a m 9-45 10 40 11 20 12 15 p m 1 2 20 3 15	97 6 97 0 97 2 97 6 97 4 96 0 97 1 97 8	5 2 3 2 2 3 6 9				28 2 01	1 2	9 a m 11 45	97 4 97 0	1		13 18	6 14
				34				1 3 01	1 2 3 4	8 30 a m 12 35 p m 1-15 3 20	98 2 99 8 101 0 104 2	1 2	1 2	10 11 6 8	1 6 8 12
				34								3		335	27
19 2 01	1 2 3 4	10 30 a m 11 10 4 30 p m 4 50	97 6 98 6 108 6 103 6	1 5				2 3 01	1 2 3	9 20 a m 10 2 15 p m	98 2 97 4 97 8			5 9 7	16 12 9
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				14				4 3 01	1 2	7 30 a. m. 1 p m	99 97 6			5 6	7 9
				14										11	16
21 2 01	1 2 3	11 50 a m 2 15 p m 2 40	97 8 97 2 97 4	4 2 3				5-3 01	1	9 a m.	97 6			3	5
				9				6-3 01	1	8-30 a m	98 8				4
22 2 01	1 2 3	9-10 a m 12 0 6 p. m	98 97 6 97 6	4 1		3 4	1 1	7 3 01	1	12 a m.	100				3
				5		7	2	9 3 01	1	12 26 p m	97 6			3	2
23 2 01	1 2 3	8-10 a m 12 35 p m 4 35	97 6 97 4 97 6			5 6 10	3	10-3 01	1	11 a m	98 0			2	3
				3		21	3	11 3 01	1	7 20 a m.	97			3	
25-2 01	1 2	4 p m 5-30	97 6 97 4			2 7	3 8	12 3 01	1	11 30 a m	97			3	2
						9	6	13-3 01	1	8 a. m	97 2			2	1

Each examination lasted 20 minutes The daily totals are put in black figures

Case No III—From the chart of this patient it could be seen that lime juice absolutely had no effect on his fever.

I may here state that lime juice was given in addition to the prescriptions containing nitric ether and hyocyamus, as well as quinine (gr x) twice a day when the fever had ceased.

From the 1st September to the 31st December 1900, 121 cases of ague were admitted into hospital. Of these 29 were put on the lime juice treatment. The lime juice absolutely had no effect on three of these cases, and in another four the temperature came down gradually many days after commencing the treatment. I consider these four cases to be failures owing to the length of time the temperature took to become normal.

Therefore of the 29 cases the lime juice has failed to stop the fever in seven cases and succeeded in 22 cases. In other words, the lime juice has failed in a little less than 25 per cent and succeeded in a little more than 75 per cent of the cases. These 29 were the worst cases we have had in hospital. Then fever either lasted for over a week or the temperature went up to about 103 F for more than four days.

I am of opinion that the taking of a little lime juice every day is a very good prophylactic against ague. I have not any statistics to give to back me up in this last statement, but can say that ever since trying this treatment I have taken lime juice every morning for breakfast and have been free of fever. I have had fever once, and that was about ten days before commencing the lime juice. Another officer of the regiment states that he has taken lime juice for breakfast for the last one-and-half years, and that during this period he has not suffered from ague. Previous to this he had suffered from fever on two or three occasions. The other officers who have not taken lime juice regularly have had occasional attacks of fever. I am greatly indebted to First Grade Hospital Assistant T Govindaswamy Mudher for helping me to take the notes of these cases.

PRELIMINARY NOTE ON A NEW METHOD OF TREATING MALARIAL FEVERS

By V H ROBERTS,

LIEUTENANT, I M S

THE following note is published in the hope that the method indicated in it may be worked out more fully by persons in the possession of more leisure, and with access to better material and instruments, than the writer can at present avail himself of. As apology for its incompleteness, I can only plead the stress and strain of active service, coupled with separation from the records of all experiments made in connection with the subject. It is hoped that on the return

of the China Field Force to India that opportunity will be afforded to extend and confirm the observations about to be narrated.

The method is of such an unusual character that some explanation of the genesis of the idea of employing such a treatment may be offered. I was sitting in India, in my garden, after reading a paper by Halliburton on snake poisoning, in which he adduced arguments for the view that the active principle of snake venom was probably a nucleo-proteid, and also pointed out that certain tribes in Africa were said to secure immunity from snake poisoning by devouring the heads of snakes. I had suffered from several attacks of Benign Tertian Malarial Fever during the preceding months, and had several times demonstrated the parasite in my blood to the students of the Grant Medical College, where I was then acting as Professor of Physiology. In the half filled tank, on whose edge I was sitting, I observed several frogs, of a very dark colour, devouring mosquitoes as they alighted in the tank, and the thought occurred to me that I might isolate from the frog's blood some substances which would confer immunity against the malarial parasite with which the mosquitoes were richly stored.

In pursuit of this idea, I collected the serum of 37 frogs, made an aqueous extract, filtered and precipitated the nucleo-proteins and nucleohistones by adding CaCl_2 to the measured solution, to the extent of 5 thousandths approximately (5 per cent). The mixed precipitate was dissolved in NaCl solution (5 per cent), a measured portion evaporated, and the residue weighed. After allowing for the salts present, the solution was diluted so as to contain 0.05 milligramme of mixed proteins per cc. I added water, salicylic acid, 1 gramme per ounce to prevent contamination by micro-organisms.

I ceased taking quinine for some weeks, and was rewarded by several returns of the fever. I examined my blood on each occasion, and each time observed the Benign Tertian Parasite. I may here note that I several times mixed some of the prepared solution, with the infected blood, on the warm stage, and witnessed a wonderful phenomena. The solution possessed the power of breaking up the red corpuscles which contained parasites almost immediately after coming in contact with them, the corpuscles seemed to explode, and the single large protoplasmic bodies or the sporulated forms were scattered over the field. I once observed the injection of a protoplasmic body by a leucocyte. The hæmolytic power was extraordinary, considering the extreme state of dilution and the quickness with which it was exerted. After injection of 1 cc, my temperature rose to 103°F in eight hours and then subsided to normal in six. I suffered from thirst, perspired profusely, excreted uric acid in excess, and this increased output was maintained for three days. On the second day the amount of

unic acid by Hopkin's method was 25 times the normal. After four days another injection produced similar symptoms, only much less intense, the temperature, for instance, attaining only 100°F. A third injection produced no effect, and repeated examinations of the blood failed to reveal parasites, nor have I suffered from malarial fever since I collected a considerable amount of serum, and made a large quantity of solution, which I employed partly on my servants, partly on sepoys, the records of these cases I was compelled to leave in Bombay, and hence I do not offer here any accurate record of their clinical histories, with few exceptions they pursued a course similar to my own. The degree of immunity conferred and the efficacy of the treatment in severe malignant cases I have not yet ascertained.

That the solution contains a cystotoxine, as far as the red corpuscles is concerned, of extraordinary power, seems indubitable. It acts somewhat as a ferment. See papers by M. Boidet, *Annales de l'Institut Pasteur*, 1898. Those who wish to render the investigation more precise can learn how to separate the nucleo-histone from the nucleo-proteid, by the difference of solubility of their lime salts, from the papers of Pekelharing in the proceedings of the Academy of Sciences, Amsterdam. I regret not to have the exact reference, but a glance at the index will give it.

NOTES OF A CASE OF PLAGUE DETECTED ON POST-MORTEM EXAMINATION

By E. S. BHARUCHA, L.S. & M.,

Poona

THE dead body of a woman, name unknown, aged about 30, Hindu, was brought to the Sassoon General Hospital on the morning of 8th February 1901, at about 9 A.M. from the Poona Railway Station, for opinion as to the cause of death. She had arrived from Bombay by the early morning train and was found dead in her compartment when she reached this station.

The post-mortem was commenced at about 10-30 A.M. (at least four hours after death). The body was still warm, and *rigor mortis* had not yet commenced.

Thoracic cavity—Both the lungs healthy. Pericardium contains a small quantity of fluid. The heart somewhat fatty, otherwise normal.

Abdominal cavity—Liver enlarged and deeply congested. Spleen enlarged.

On drawing the intestines to one side, the mesentery along the whole of its attachment was found to present an uniform extravasation of blood, commencing from the right iliac fossa and passing upwards along the middle line to the duodenum and to the posterior surface of the stomach. There were also similar patches of extravasation on the surface of the cæcum, the

horse-shoe curve of the duodenum and a part of the stomach near its splenic end.

A suspicious faint black spot, like that produced by the application of marking-nut, having been detected in the right groin, an incision was made over the spot reaching the femoral glands, and similar extravasation to the above was detected round the femoral vessels, which was continuous with the general extravasation noted in the abdominal cavity. Neither the femoral nor the inguinal nor any of the mesenteric glands were found enlarged.

To test the appearances noticed in the right groin, a similar incision was made on the opposite side with negative results.

Uterus—Was found enlarged and presented a clot, at the fundus. Both the ovaries were enlarged and cystic.

Remarks—There was no history obtainable as to what she had suffered from during life, but considering that the person had just arrived from Bombay, which is at present severely infected with plague, the sudden death, and the warm condition of the body continuing several hours after death, there were sufficient grounds to suspect that death might have been due to plague, and so it proved.

This case, in my opinion, was an example of the septicæmic type of plague, and it would have been interesting had the duration of the illness been known. I believe it could not have been very long, as the patient seems to have been able to travel by rail only the previous evening. The appearances noted in the abdominal cavity have, as far as I know, not been described before. The inflammation seems to have started in the groin and travelled upwards, with great rapidity—so much so that no opportunity was afforded to the glands for elimination of the poison, hence the complete freedom from enlargement of any of the glands in the area affected. At the outset a very careful inspection of the groins and axillæ was made with negative results, and but for the finding of the appearances observed in the abdomen, the inflammation of the groins would have escaped notice. Hence the insufficiency of an external examination and the necessity in every suspected case of cutting down on all the likely places where buboes have been noticed in cases of plague become manifest.

DRY SYMMETRICAL GANGRENE AFTER CHOLERA.

By A. C. DUTTA,

Assistant Surgeon, Berhampur

THE patient was an adult female brought to the hospital on 31st November 1900 for treatment of gangrene of both feet. Her history ran as follows—

She had cholera ten days ago, when she got over the attack she found her feet as cold

and shrunken as they had been in collapse, gradually the skin became blue and toes dried up. When she came to the hospital both her feet were found perfectly blue, gangrene extending half an inch below the ankle, toes as hard as pieces of wood, standing in a state of complete extension, movements altogether abolished, skin over them shrunken, skin over the sole and dorsum were equally hard and dry, great pressure was necessary to produce a little pitting which even occurred only at the upper part, line of demarcation was not yet formed, and both limbs were exactly alike, she complained of a great deal of pain and burning in the affected parts. A pity it was that she attended the out-door only for three days, and finding no good went away without giving us any opportunity of watching its termination.

Now the essential peculiarity of the case lies in—

(1) The symmetrical nature of gangrene attacking similar parts of both feet

(2) The perfect dryness of the parts involved

It is often remarked by authors that local gangrene does sometimes occur in cholera, in some cases a diphtheritic inflammation and not gangrene develops, but very few speak about the symmetry related in the case above, which indeed is very rare. Now this symmetry may be purely accidental due to equal draining up of fluid parts of blood in both legs and feet, but in my mind it appears to be the result of some *neuro vascular changes*—changes which act upon the kidney to produce anuria—changes which also explain the symmetry of Raynaud's disease, the symmetrical nature of the present case throws some light, I think, upon the much debated question of anuria, whether it depends simply on the drain upon the blood or upon some *neurotic disturbance* causing spasms of the renal arteries.

If we can find out symmetry of the symptoms in different parts of the body in few more cases, we can with some force of reason assert that a nervous influence does come into play in producing some of the various symptoms of cholera asiatica.

A Synopsis of Hospital Practice.

ON REPARATIVE OPERATIONS FOR THE CURE OF OBLIQUE INGUINAL HERNIA

BY ERNEST F. NEVE, M.D., F.R.C.S.,
Surgeon to the Kashmir Mission Hospital

CAUSES OF HERNIA

The contents of the abdominal cavity can be compressed to a limited extent, but the resistance offered is considerable and naturally tends

to act on the weakest portions of its enclosing wall. The result may be a hernia. And it does not seem probable that the mesentery plays any special part, in its production either through undue length or abnormal attachment, for it is always long enough for bowel to project from an opening in the abdomen. On the other hand, we know that the line of scar after abdominal operations does not unfrequently become weak and stretch under the pressure of the abdominal contents. We may then consider that the predisposing cause of hernia is a congenital or acquired weakness of the abdominal wall. An exciting cause is often to be found in the existence of a severe cough, habitual constipation or a habit of lifting heavy weights, in fact anything which produces frequent strong contractions of the diaphragm and abdominal muscles.

AIMS OF OPERATION

Certain conditions are essential before an operation is undertaken for the radical cure of hernia. Firstly, the operation must be safe as regards life, and it should be safe as far as the scrotal contents are concerned. Secondly, efficiency is necessary and simplicity desirable.

These rules admit, however, of some qualification. I do not know of any surgeon who has done a large number of radical cures (say 200) without a single death. In the hands of the best operators the mortality varies from 2 to 6 per cent. But Anderson of Nottingham has recently recorded 190 cases with two deaths. In the Edinburgh Royal Infirmary, between the years 1891 and 1897, the mortality on 308 operations, not including cases of strangulation, was a little over 2½ per cent.¹ Rushton Parker had 8 deaths in 190 cases and Banks 6 in 117, a rate of respectively 4.2 and 5 per cent.²

This is not ideal for a reparative operation. Even a very small mortality would indeed be almost prohibitive, were it not that every case of hernia is exposed to the *much greater peril* of possible strangulation, so the operation for radical cure is something more than a reparative procedure. In not a few cases it actually saves life, by averting subsequent strangulation.

STRANGULATED HERNIA

The death-rate of unrelieved strangulated hernia is 100 per cent. Owing to the late stage at which many cases are brought in, the average mortality is only reduced by operation between 32 and 46 per cent according to Southam, of whose own cases, out of 36 fourteen died.³ In the Edinburgh Royal Infirmary admirable results were obtained. Of 82 cases only 21 died, or a little over 25.5 per cent.⁴ This

¹ *British Medical Journal* vol i, 1901, p 261

² *British Medical Journal*, vol ii, 1893, p 1037, et seq

³ *Lancet*, vol ii, 1891, p 1217

⁴ References: Edinburgh Hospital Reports, vols 1 to 6

looks rather as if a fair proportion of cases had been seen early. In Kashmir it is a remarkable fact that in the eight years from 1880 to 1889, not one single case was brought in, although we were doing a considerable number of radical operations on ordinary hernias. Apparently the disease was unrecognised, and the patients treated as medical cases by the hakims with uniformly fatal results. Not very long ago a somewhat similar condition of things existed even in our own country "where strangulation, an incident of relatively frequent occurrence, was regarded as a desperate disorder beyond help from leechcraft. This is shown by the bills of mortality of old London, in which strangulated hernia is entered under the terribly significant name *miserere* ⁶"

Since 1890 we have performed ten operations for strangulated hernia, with a mortality of 4. In all these fatal cases the bowel was gangrenous, and there was of course no question of doing the radical cure. Where, however, reduction is considered safe, there can in most cases be no possible reason for omitting radical cure. This is illustrated by the following case under the care of Mr A Neve S D, *æt* 65, admitted 14th March 1894. Complete obstruction since two days, abdomen swollen, pulse weak, anxious expression, has vomited since last night. There is a right inguinal hernia the size of a coconut, hard and ridged. On opening the sac and relieving the constriction, pints of clear fluid with sago grain particles escaped from the abdomen and a few ounces of blood-stained fluid from the sac. The bowel was red and velvety, and the sac cedematous and much inflamed. The latter was excised, its neck ligatured, and the rings sutured. The abdomen was still very hard and no gurgling heard. But in the night, the bowels were freely moved, and subsequent progress was uninterruptedly good.

In order to save time it is important that the operation should be simple as well as efficient. Especially is this the case in strangulated hernia, where there is greatly increased danger from a prolonged operation.

Various methods—Previous to 1895 for the simple radical cure we frequently practised Spanton's operation. This, which is very simple, is performed as follows. A scrotal incision is made 2 inches below the pubic spine. The left forefinger is passed into this and up to the internal abdominal ring, invaginating the sac as far as possible before it. A special instrument like a long corkscrew with a detachable handle is entered just above the internal abdominal ring and screwed in so as to pick up the aponeurosis of the external oblique, the conjoint tendon, invaginated tissues, and the pillars of the external abdominal ring. The point is brought out at the original incision and

protected by a small pad of gauze. The instrument is left in for a week or more ⁶. After some experience such an operation can frequently be completed in less than ten minutes.

For many years the mortality of operations for the radical cure of hernia by the open method was great. Spanton found that of 149 cases reported in the Journals up to 1885, eight died, and Macleod of Calcutta had lost 6 out of 28 cases ⁷. On the other hand, Spanton's operation appeared, if reasonable care was exercised, to be absolutely safe and very rapid.

From 1882 to 1890 we performed 50 operations by this method without a single death. Of these, however, nine were known to have recurred. The views which we held with regard to the operation in 1890 were that even if the chances of recurrence were greater than 18 per cent, its safety rendered it the best method of procedure. While in the event of recurrence a second operation presented no serious obstacle. The drawback of Spanton's method appeared to be that the sac was not dealt with in a really satisfactory manner, and it was difficult to prevent undue pressure on the cord. For these reasons and also as Macewen's continued success began to show the great measure of safety which could now be attained by the open method we gradually began to use it more, still however adopting Spanton's for suitable cases. Nineteen more screw operations were done, and then, in 1894, we had a death. An infant, under the care of Mr A Neve, cried and struggled so incessantly after the operation, that it was deemed wise to remove the screw earlier than usual. The crying and straining continued, and the newly united rings were burst open and bowel forced down. The case became septic and death occurred from peritonitis.

This was the last operation done in the Mission Hospital by Spanton's method, which, however, had served us well and, including this last case, had a good record of less than 1½ per cent mortality. And it must be remembered that the one casualty was an accident and only indirectly chargeable to the method.

Of the open operations there is a considerable variety. Some are chiefly of historic interest, others are popular at the present time. There is Bank's operation, in which the sac is dissected out, ligatures close to the internal ring and cut off, the canal and external ring being closed by silver sutures. Ball used to free the sac up to and around the internal ring. He then twisted and secured it *in situ* by sutures passed through the pillars of the external abdominal ring. Barker's operation differed from Bank's in leaving the sac alone and only clearing the neck which was ligatured, divided and pushed up into the abdomen, while the rings and canal were closed with sutures. Macewen's method is well known, and

⁶ *British Medical Journal*, vol 11, 1880, p 921

⁷ *British Medical Journal*, vol 1, 1882, p 271

his results extremely good. The sac is dissected out and freed from the inguinal canal and inner surface of the internal ring. It is then folded on itself repeatedly by a stitch, the free end of which is brought out one inch above the internal ring and secured by passing it several times through the external oblique muscle. The folded sac is intended to act as a bulwark. The internal ring is then closed by one or more special looped stitches and the external ring separately sutured.⁸ The next two methods are somewhat similar. Bennett did not dissect out the sac but cleared its neck, opened and reduced the contents. He then divided it below the external ring and invaginated the neck into the peritoneal cavity by a looped thread of catgut transfixing the neck half an inch from the cut edge, and both ends of which are brought out $\frac{3}{4}$ inch above the external abdominal ring $\frac{1}{2}$ inch from each other and tied. The neck of the sac is ligatured or sutured before it is inverted. The inguinal canal is sutured, and the upper two sutures transfix the front of the neck of the sac anterior to the invaginating loop of catgut. These stitches are not tied till the inversion has been effected.⁹ Kocher dissects out the sac and brings its invaginated fundus through a small incision in the aponeurosis muscle and parietal peritoneum. He pulls it tight, ligatures the neck, and with the ends of this ligature sutures the above incision.¹⁰ The rings are then carefully sutured.

Two of the operations most in vogue now-a-days are Bassini's and Halsted's. They are much alike and differ chiefly in their treatment of the cord and the extent to which the aponeurotic and muscular wall is divided. Bassini dissects out the sac, splits the aponeurosis of the external oblique along the whole length of the inguinal canal, clears the neck to the internal abdominal ring, ligatures and divides. He then draws down the outer border of the conjoined tendon and fleshy lower border of the internal oblique and transversalis muscles and sutures them to the deep aspect of Poupart's ligature. The cord is left external to all or most of these sutures. He then stitches up the gap in the external oblique aponeurosis. Halsted makes a long incision from 2 cm. internal to the anterior superior spine to the pubic spine and divides aponeurosis, internal oblique and transversalis muscles throughout the whole extent of the incision. He then opens the sac, passes in two fingers, strips, isolates and cuts away the fundus, suturing the neck with 7 or 8 quilted sutures. The cord is then isolated and hooked out to the extreme outer angle of the wound, which is closed by a row of quilted sutures, including the aponeurosis, internal oblique and transversalis muscles.¹¹

As might be anticipated, such extensive division of the musculo-aponeurotic wall of the abdomen favours recurrence. To obviate this, Phelps (*New York Medical Record*, Vol 59, 1901, p 167) as a modification of Halsted's operation, puts a continuous suture of silver wire into the cut edges of the neck of the sac. The transversalis and internal oblique muscles are also stitched with a separate continuous suture and a third row closes the aponeurosis of the external oblique. In addition to this he places (under the muscles) a fine filagree of silver wire, from 10 to 150 feet being employed. This apparently accomplishes its object, but it may well be questioned whether the same end may not be attained by a much less extensive operation and a very much smaller expenditure of silver wire.

To be successful, an operation must deal efficiently with the sac and with the abdominal rings. A great deal more, however, depends on the thoroughness of the operator than on any mere theoretical excellence of the method employed. Any operation is faulty, which leaves a plug of sac in the inguinal canal or projecting against the site of the internal abdominal ring. No operation is satisfactory which leaves a depression or fossa of peritoneum at the internal abdominal ring or which fails to close this ring. The unnecessary division of muscle or aponeurosis is to be deprecated as the result is scar tissue which is apt to yield. Although the peritoneum has lost its terrors to surgeons, I feel sure that the safest operation in the long run will be that which closes the neck of the sac most promptly, does the least poking of fingers, instruments or sponges into the peritoneal cavity and insures most carefully against the slipping of the ligature which encircles the neck of the sac, when that structure has been divided.

The method, which I have adopted since 1894, is a modification of Macewen's. The sac is dissected out, and its neck cleared to the internal abdominal ring. It is then ligatured as high as possible, and to prevent slipping of the ligature, which would result in a large opening communicating with the peritoneal cavity, I stitch the edges with catgut, leaving the ends long. These are separately threaded into a Macewen's needle and brought out $\frac{1}{4}$ inch apart and $1\frac{1}{2}$ inches above the internal abdominal ring where they are tied in the angle of the incision, which is pulled upwards for the purpose. The canal is now sutured by Macewen's method so as to close the internal abdominal ring and bring it well behind and external to the outer pillar of the external abdominal ring, which is separately sutured.

During the past ten years we have performed 89 operations of this kind. The following is the only case of death. B. R., æt 55, left inguinal hernia of five years' duration. A great mass the size of a cocoanut, difficult to return. I operated on August 13th, 1895. Long incision,

⁸ *British Medical Journal*, vol 11, 1887, p 1263

⁹ *Lancet*, vol 11, 1891, p 599

¹⁰ *Encyc Medica*, 1900 vol 4 p 532

¹¹ *Lancet*, vol 11, 1892, p 609

dissected out sac, ligatured neck, cut away fundus. Rings closely sutured. There was a slight rise of temperature on the evening of the 14th, and during the subsequent days it varied between 98.8 and 102.4, the latter being the highest point reached. The first dressing was on the 17th, when the wound was found united and dry. There was no marked tenderness, but the scrotum was oedematous. On the morning of the 19th, there were some symptoms of tetanus, the jaw was stiff. He was carefully fed, but died on the 20th, without having developed any general spasms. The wound was a little open at the top, and some apparently septic serum oozed out. There was no purulent infiltration. This case is inexplicable. The view which I took at the time was that the patient had fingered his wound and that his hands were soiled with infected earth. This is the less unlikely owing to the frequent use in the East of earth for special toilet purposes. I should however add that, immediately after operation, he was by mistake placed for two or three hours in a ward in which a fortnight previously a case of tetanus had been, but of course thorough disinfection had been done in the interval.

Since 1895 we have had no other deaths. In a simple case the operation can be finished in 20 minutes. Where the sac is very large, or the structures adherent, a longer time may be required. Sometimes it is better to leave the sac *in situ* and only clean and divide the neck. In congenital hernia the higher up the separation of the cord from the neck is effected, the easier it is.

About half the operations were performed by Mr. Arthur Neve.

SURGICAL CASES FROM THE SAMBHU NATH PUNDIT HOSPITAL, BHOWANIPUR, CALCUTTA

By E. HAROLD BROWN, M.D.,

MAJOR, I.M.S.,

Civil Surgeon, 24 Pergunnas

(Continued from page 140)

The parietes being thin, the peritoneum was soon reached and, all hæmorrhage having been arrested, I picked up the peritoneum and opened it, there being an immediate gush of thin, greenish, offensive pus. Enlarging the opening in the serous membrane to the entire extent of the wound, I passed in a finger and found there was a large cavity, completely shut off from the rest of the cæcum, but there was so much matting of the parts that the appendix could not be identified.

Considering the patient's condition, I did not think that further attempts to search for the cause of the mischief were justifiable so put in a drainage tube, and treated the cavity as an abscess in any other part of the body. Over a pint of pus escaped, and there was a free discharge in the dressings subsequently, the patient

being dressed at least twice a day. There was great improvement at first, he slept well that night, having scarcely any pain, the temperature was normal, and the pulse dropped to 72, there was no vomiting and only occasional slight hiccup.

He did well for four days and then began to grow weaker without obvious cause, we did our very best for him with regard to feeding and nursing, but he slowly sunk and died the eighth day after the operation.

CASE V—Appendicitis. Laparotomy. recovery. The patient, a stalwart young Mahomedan, aged 30 years, had been complaining for several days of pain in the right iliac region, and, on admission to hospital in March, had a pronounced swelling on that side of the abdomen which elicited fluctuation.

The patient's temperature was 102.6°, the pulse was 120, and he was in great pain, so I arranged to operate as soon as he could be prepared for operation.

Chloroform having been administered, I made the usual incision and gave exit to a pint of horribly fetid pus. As in the case just recorded, the abscess cavity was completely shut off, and I was not inclined to disturb the parts by meddlesome interference, so proceeded to drain the cavity.

The after history of the case was uneventful, the temperature came down to normal, and the patient quickly improved. On the second occasion of dressing the parts, the remains of the appendix were found as a slough in the discharge and the tube had to be shortened within a week.

The patient was discharged, perfectly well, within a month.

CASE VI—Appendicitis. Laparotomy. recovery. The patient, a Mahomedan, aged 35 years, came to hospital on the 17th of July, complaining of a swelling in the right iliac region. Says he has been ill, off and on, for two months, his ailment started with severe pain, of a colicky nature, in the middle and right side of the abdomen, it was accompanied by fever and constipation and, under treatment, he improved in about a week, and remained fairly well for a fortnight, when the pain returned with greater severity. This time there was great tenderness as well, and, after some days, a swelling appeared which has continued to enlarge. He had similar attacks of pain twice last year, at an interval of a few months.

Present condition. General condition good. Temperature 101°, pulse 110, no vomiting, bowels constipated. There is a well marked swelling in the right iliac region visible to the eye, the skin is livid and slightly oedematous, there is very great tenderness, especially at MacBurney's point, fluctuation is detected with ease.

The patient was prepared for operation as usual, and I proceeded to operate on the following morning, making the usual incision, I found the parietes extremely vascular, so that it was necessary to tie and twist a good many vessels before reaching the peritoneum, the latter structure was extremely adherent to the parts beneath and, on opening it, there was a gush of fetid pus, more than a pint escaping. The condition of the parts was exactly the same as in the case last recorded, and the treatment identical. A tube was passed in and recovery was very rapid, the patient leaving hospital, perfectly well, in twenty three days.

In this case, if the patient had delayed a few days longer, the pus would have worked its way to the surface, pointing in the iliac region like an ordinary abscess, and, as it happened, the condition was almost the same as a simple abscess, as the peritoneal cavity was completely shut off by adhesions and the treatment was simple.

In a case seen, a few years ago, the pus actually travelled and pointed like a psoas abscess, appearing below Poupart's ligament.

(To be continued)

THE
Indian Medical Gazette

MAY, 1901

MAJOR BANNERMAN, I M S, ON THE
RESULTS OF FOUR YEARS' INOCULATIONS
AGAINST PLAGUE

OWING to the recognised impossibility of carrying out effectual sanitary measures against plague in ignorant communities such as are the inhabitants of the majority of the cities of India, it has become a matter of vital importance to further the spread of the only means of checking plague which has universally been followed by favourable results. We refer, of course, to inoculation against plague by means of the anti-plague vaccine introduced by Mr Haffkine.

It is for this reason that we welcome the pamphlet recently published by Major W B Bannerman, I M S, the Superintendent of the Plague Research Laboratory, Bombay, who for five years past has done yeoman's work in the great struggle against plague.

It is not possible for us to give all the facts and figures marshalled by Major Bannerman in this valuable pamphlet, we can only quote the conclusions given by him at the end of the account of the trial of the inoculations in each instance quoted in the pamphlet. Up to the end of the year 1900 no less than 1,628,696 doses of the plague vaccine have been issued from the Bombay Laboratory, and in all cases where accurate records have been obtainable Major Bannerman is able to state "*without exception there has resulted a striking reduction in plague mortality and also a markedly favourable effect on the case incidence has been produced*".

We shall now quote these results.

At DAMAN, a Portuguese town north of Bombay, the results of inoculation at three periods are as follows —

If the 1,017 inoculated had suffered in the same proportion as the uninoculated, they should have had 101 deaths instead of 6, a difference in favour of inoculation of over 94 per cent.

In the second period, the difference was 85 per cent, and in the third period it was 93 per

cent, or to sum up the case of Damam, 2,197 inoculated had 36 deaths, or 1.6 per cent of mortality, while the 6,033 not inoculated there were 1,482 deaths or a mortality of 24 per cent. In the Pansi community in Lower DAMAN, where the inoculated and the non-inoculated lived under precisely similar sanitary conditions, the difference in favour of the inoculated was no less than 97 per cent.

At LANOWLI if the inoculated had suffered in the same proportion as the uninoculated, they ought to have had 19 deaths instead of 7, a difference of 85 per cent.

At KIRKEL, a military cantonment, the 671 inoculated should have had proportionately 112 cases and 77 deaths, if they had remained as susceptible to the disease as their uninoculated relatives, but instead of that they had only 32 cases and 17 deaths, or a reduction in the death-rate of 77.9 per cent.

In BLIGAUM an inoculated military community suffered, as compared with an uninoculated civil population, from 10 to 31 times less, month by month, during the course of the epidemic.

At the UMINKHADI JAIL of 147 prisoners inoculated there were only 3 mild and doubtful cases of plague, while among the 127 non-inoculated prisoners 10 cases occurred and 6 deaths.

At UNDHERA, a well-known case which has been investigated with especial care, if the inoculated had suffered to the same extent as their non-inoculated relatives, they should have had 29 deaths from plague instead of 3 only.

In the KHOJA community, Bombay, supposing that the inoculated had remained after operation as susceptible as before, they ought to have had proportionately 31 deaths instead of only 3, or a difference of 90 per cent in favour of the inoculated.

At HUBLI, where no less than 38,712 persons were inoculated, 1 in every 72 of the inoculated population died, whereas no less than 1 in 7 of the non-inoculated succumbed to plague, a difference of 89 per cent in favour of the inoculated.

At the SOUTHERN MAHARATTA SPINNING MILL if the 1,098 inoculated persons had remained as susceptible as the 75 not inoculated, they ought to have lost 293 by death instead of only 30, a difference of 89 per cent in favour of the inoculated.

EMPLOYEES OF THE S MAHARATTA RY. If the 1,260 inoculated had suffered to the same extent

as the 760 not inoculated, they ought to have had 58 cases and 34 deaths, instead of 11 and 2 respectively. The number of cases therefore appears reduced by 81 per cent and the deaths by 94 per cent.

At DHARWAR JAIL, out of a population of 374 prisoners, five cases of plague had occurred, all fatal, after inoculation of the whole population of the jail only one case followed after two days, and he recovered.

At BROACH the number of cases among the inoculated appears to have been reduced by 86 per cent, and the number of deaths by 88 per cent.

At DHARWAR the inoculated should proportionately have had 270 cases and 223 deaths, instead of only 129 cases and 54 deaths, the number of cases appear here to have been reduced by 55 per cent and the mortality by 75 per cent.

At GADAG if the 13,004 inoculated had suffered to the same extent as those not inoculated, they ought to have had 868 cases and 674 deaths, instead of only 193 and 83 respectively, a reduction of 77 per cent and 87 per cent respectively.

In BELGAUM CANTONMENT in 1899 if the inoculated had suffered to the same extent as the non-inoculated, they should have had 537 cases with 367 deaths, instead of only 87 and 40.

In the MAURITIUS, according to the report submitted by the late Captain J. S. Stevenson, I.M.S., if the inoculated had suffered proportionately, they should have had 119 cases and 102 deaths, instead of only 66 and 38 respectively.

At BULSAR, a town near Surat, the inoculated should have had 148 cases and 115 deaths, instead of only 84 cases and 31 deaths.

Among the Jewish community at ADEN the inoculated ought to have had 100 cases with 78 deaths, instead of only 23 and 8.

In the YERRODA JAIL 4 cases had occurred in October last, then the whole population was inoculated, and among an average of 1,658 prisoners no cases have since occurred.

We have thus briefly given the summary of the results of inoculations in many places, for the full details and figures the reader is referred to the report itself. We believe that no one who studies this report can do other than believe in the efficacy of inoculation as a protective measure against plague, and we think that it

will be agreed that Major Bannerman is fully justified when he draws the following conclusions from this review of four years' experience of this prophylactic —

1 That inoculation is harmless

2 That when given in the incubation state, i.e., before the signs of plague are apparent, it has, in many cases at least, the power of aborting the disease.

3 That inoculation confers a high degree of immunity from plague, and so reduces very greatly the number of attacks.

4 That when in spite of inoculation a person is attacked his chances of recovery are very greatly increased.

THE TROPICAL SECTION AT THE B. M. A. MEETING

The Tropical Section of the British Medical Association Meeting to be held at Cheltenham next July, will be one of special interest to medical men in India. It will be under the Presidency of an ex-officer of the Indian Medical Service, viz., Major Ronald Ross, whose work, as we all know, has reflected a lustre on the Service. Indeed, since the institution of the Tropical Section in 1898 officers of the Indian Medical Service have very largely contributed to the success of the meetings. A glance at the list of names of those who have read papers will show to what an extent this is true. Last year, especially officers of the I.M.S. rallied to support Professor Kenneth McLeod in the presidential chair, and we hope that in the present year we may be able to chronicle an equally large number of contributions from medical men in India. The subjects for discussion in 1901 represent a new departure, in that this year one subject will be a surgical one, that of "Stone in the Tropics." When we say that this subject will be introduced by Mr. P. J. Freyer, formerly a Civil Surgeon, N.-W. P. & Oudh, and now Surgeon to St. Peter's Hospital, London, it is enough to show that the work of Indian Surgeons, in establishing the operation of litholapaxy as the operation of election, will be fully and adequately dealt with, Mr. Freyer having been, as we all know, the pioneer advocate in India of this operation. Our Special Stone Number of last August showed to what an extent this operation had become established in India. This is a subject on which we hope to hear of many Surgeons in India contributing from their unique experience.

The next subject for discussion will be the "Prevention of Malaria," and it is hoped that it will be possible for Sir Wm MacGregor, KCMG, to introduce the question. Those who read Sir Wm MacGregor's speech some months ago at the opening of the London School of Tropical Medicine, will be aware that he will handle this important subject in a fascinating manner. Sir William is not only a medical man, but an Administrator of repute, and when a practical man of that class preaches the prevention of malaria it is enough to show that the question is one well within the range of practical action. Indeed at the present hour the question of mosquito malaria need no longer be called a theory—it is a scientifically approved fact, and hence it is the bounden duty of all not to pick holes in the theory and conjure up objections as if the theory was some horrid bugbear to be fought against, but rather by action and example to do all that in them lies to carry out the practical means of prevention therein indicated. We know that numerous medical men in India are keenly interested in the subject and are working at it, and we hope that they will take advantage of this meeting to report their experiences and observations as several have already done in our own columns.

The third subject for discussion is also one of the greatest practical interest and importance, it is the diseases of European children in the tropics. This is a subject which must appeal to every one in India. The question of the colonisation of the lands of the tropics newly opened up to European enterprise within recent years is largely a question of the possibility of the healthy growth and development of European children in those regions. Unless tropical lands can be rendered fit for European children to live and thrive in, there can be no colonisation in the true sense of that word. We may "plant" a tropical country and develop its resources by European enterprise and capital, we may rule it by relays of Europeans as we rule India, but we can never "colonise" a country as long as a European child is unable to live and thrive in it. Hence the importance of obtaining all the knowledge we can on the subject of the diseases of children in tropical climes. The subject will be introduced by Lieutenant-Colonel Alexander Crombie, FRS (retired), who, during his long residence in

Calcutta, acquired a reputation of being one of the soundest European physicians that ever practised in that city.

The announcements of this meeting show that many other subjects of interest to medical men in the tropics will also be discussed, and we strongly commend the programme of this section to our readers.

LONDON LETTER

THE RECENT SERVICE COMPETITIONS

THE February competitions have obtained 28 men for the Indian Medical Service and seven for the R A M C. The number of vacancies advertised for the former was 29, and for these 33 men competed, and 28 were pronounced qualified, all of whom were accepted. The competition was, therefore, by no means keen, and as compared with former years, this would seem to indicate a decreased attractiveness and popularity of the service. At the same time it must be remembered that the number of vacancies was twice as many as usual, that the war and the plague have made unusual demands on the services of young medical men, and that the statistics of the medical schools indicate that, owing to the increased severity, duration and expense of the medical curriculum, the number of youths studying medicine inclines to decrease. Probably the diminished value of the rupee, the increased expense of living in India, the decadence of private practice as a source of income, the more frequent moves entailed by public exigencies, such as war, plague and famine and the difficulty of obtaining leave—circumstances which have been of late much commented on by the Press—lay and medical—have acted as a deterrent. These are substantial grievances, but most, if not all, of them are capable of easy and early remedy, and there are indications that the Government of India is taking steps in that direction. Meantime it is right to acknowledge that many, if not all, of these grievances have arisen from causes over which the Government has had little, if any, control, and that with all its drawbacks the Indian Medical Service still offers a fine career for competent, diligent and ambitious men.

THE R A M C

The number of men obtained by competition is quite inadequate to the requirements of the British army, and nominations have again been

placed at the disposal of the schools for the purpose of filling up the broken ranks of the Corps. These efforts to recruit a sufficiency of officers to bring up the Corps to its proper strength and provide for an increase of establishment are provisional, and it has been accepted by the Government that something must be done to place the Medical Department of the Army on a more satisfactory footing. Mr. Broderick, the Secretary of State for War, in a recent speech in the House of Commons, said that a radical change was in contemplation, and a large sum has been included in the military estimates to provide for this reorganisation. What form this reconstruction is to take no one seems to know. It is possible that no definite scheme has been formulated preceding systematic enquiry, but increased expenditure is evidently anticipated, and it is recognised that increased pay must be given, at any rate, to the junior rank.

THE NEW CONSTITUTION OF THE BRITISH MEDICAL ASSOCIATION

The Committee which was appointed at the general meeting of the Association at Ipswich in August last, has prosecuted and completed its work with commendable diligence and thoroughness, and the results of its deliberation have been published as a supplement to a recent issue of the British Medical Association. The proposals formulated by the Committee have been submitted to the branches of the Association, and the whole matter will be discussed, and, it is to be hoped, settled at the next annual meeting of the Association which will be held at Cheltenham. The new constitution which the Committee has elaborated, has in it elements of obvious reform, but presents others which at first sight appear of doubtful advantage or practicability. The object is to make the Association an organic whole embodying and reflecting the mind of the medical profession. In its present form the Association does not work smoothly nor elicit easily the dominant opinion of its members on medico-ethical and medico-political topics especially. Three proposals make for a better organisation, namely (1) the formation of smaller units as the bases of co-operation, (2) the abolition of unattached members, and (3) the grouping of units. The fundamental unit, it is proposed, shall be a division corresponding to a parliamentary electoral unit. Every member

of the Association residing within a division becomes a member of such division. Divisions are to be grouped into branches which will correspond in extent with county areas—one or several according to circumstances. These arranged together with the Annual Assembly furnish a framework for local and general action, representation and reference. The divisions are the cells and tissues, the branches, the organs, and the annual meeting is the brain. Representation is obtained in a two-fold way by the election of delegates by divisions and members of Council by branches—the first deliberative, the second executive. The delegates are on vital questions to be the mere mouthpieces and voting machines of divisions, and their voting power is to be arithmetical represented by the number of their constituents. Their function is therefore quite mechanical, and they are to be the agency by which the voice of the constituencies is to be made audible and effective, the idea being to obtain a sort of plebiscite. This is also provided for under special circumstances by a proceeding called the referendum whose nature is evident from its name. At the Annual Meeting there are to be general and sectional scientific meetings. General meetings of the Association, delegate meetings and council meetings, and an endeavour has been made to define and differentiate the functions of these so as to prevent clashing and produce co-operation and concord. These proposals appear to me to contain several weak points, the chief of which are—the double system of representation, the mechanical function of the delegate, the composite and complex annual meeting which neither as a whole nor in any of its aspects or sections constitutes or resembles a parliament. The General Council at present performs many of the functions of a parliament, but under the new constitution which aims at not only universal suffrage as regards the election of representatives but at universal voting on all questions of importance, neither of the two elective bodies would possess the character nor working of a parliament. If the delegates are to constitute the parliament of the Association, let them be elected and deputed *ad hoc*, and entrusted with parliamentary privileges and powers. I cannot see why the ministry or executive council should be elected by the branches. It seems more reasonable and consonant with the practice of other Associations that its members should be

selected from among those elected by the divisions. The form of Presbyterian Government appears to me to be simple and effective, and might well be adapted and adopted by the British Medical Association. The divisions would correspond with the presbyteries, the branches with the synods, and annual meeting with the general assembly, the members of which are elected by the presbyteries, and the united or dominant voice of which represents the principles of the Church, formulates its laws and directs its activities.

K McL

7th March 1901

Current Topics.

YELLOW FEVER AND MOSQUITOES

WE have previously (*Indian Medical Gazette*, January 1901, p 29) given an account of the experiments conducted by Dr Walter Reed and his assistants to show that yellow fever may be conveyed to the healthy by means of the bites of a mosquito (*Culex fasciatus*, Fabr). In the *Journal of the American Medical Association* (February 16th, 1901) a further account is given in full detail of many other experiments. In these instances all conditions necessary to produce a rigid environment were taken. A camp was selected, and all the residents were subjected to a prolonged and rigid quarantine. After being in this camp for a period longer than the incubation of the disease five out of the twelve non-immune residents were selected, with their full consent, to be the subjects of the experiments. Out of these five men four were attacked by yellow fever, the diagnosis being confirmed by a board of experts, after having been bitten by mosquitoes which had previously (eleven to twenty-one days before) been fed on the blood of yellow fever cases. The period of incubation following the bites was about three or four days. The other seven non-immunes also living in the camp were not attacked, and the disease was strictly limited to those individuals who had been bitten by contaminated mosquitoes.

The authors then go on to test the possibility of infection by means of fomites, *ie.*, infected clothing, and for this purpose a large quantity of dirty and specifically contaminated clothing taken from actual cases of yellow fever was stored in a special building closed and dark to avoid any possible disinfection by sunlight. In these unsavoury surroundings Dr R P Cooke, U S Army, and at various times six other non-immunes slept for no less than sixty-three nights and not one of them was attacked,

though they freely handled and slept in dirty and specifically contaminated clothing and bedding. Again to show that infected mosquitoes, rather than infected clothing, were the means of conveying this disease, another building was erected, in one-half carefully screened off numerous infected mosquitoes were let loose, and into it entered three times for twenty or thirty minutes a man named Moran, he was freely bitten by these mosquitoes, and was in three days attacked with yellow fever, whereas two other non-immunes who lived in the same hut but separated from the infected mosquitoes by fine wire gauze all escaped. This explains the so-called "house infection" in this disease. Our authors have also succeeded in infecting with yellow fever by means of the injection of blood from cases of yellow fever.

The above facts are strong evidence in favour of the view that yellow fever, like malaria, is conveyed by means of the mosquito, and not by means of infected clothing. These experiments seem to have been conducted under rigid experimental conditions, and must be considered to be strong evidence in favour of the mosquito theory. The one weak point in these experiments, as contrasted with those on malaria, is that the germ of the disease has not certainly been isolated, indeed recent researches seem to put out of count Sanerelli's bacillus, nor, consequently, has its evolution been traced in the mosquito. No doubt research will be directed to this end, but we note that the preliminary report of the Liverpool yellow fever expedition does not favour a protozoon as the cause of the disease.

BERI BERI IN TAMILS

THE correspondence in this issue and in that of March 1901 (p 114) on the subject of the prevalence of beri-beri in Tamils is one of some interest in connection with the ætiology of that disease. The paper by Captain Baring, RMS, in our September issue and his present letter show that beri-beri is very common among Tamil-speaking adults in Rangoon, while their women and children to a large extent escape, whereas the letter from Dr Tertius Clarke (March, p 114) showed that the disease was very common in Lower Perak among Chinese and very rare in the Tamils immigrant there. This and the absence of the disease among women and children in Rangoon points to some thing like a dietetic difference. It is scarcely likely that beri-beri is merely an alcoholic neuritis, but Captain Rost's very suggestive paper in our December number showed that the rice beer was to be suspected. If Captain Rost's discovery of the angular bacillus is confirmed in other places, a great step will have been made in clearing up the ætiology of the disease. Meantime those who have read the reports of the

Royal Commission on beer poisoning will be inclined to look to the presence of arsenic as a possible cause. Recent analysis seem to show the presence of arsenic to a startling extent in numerous articles. It is probable, as Major Ronald Ross has suggested, that an inquiry into the composition of native sweets, sugar and drinks might throw much light upon the ætiology of beri-beri. That cases of chronic arsenic poisoning have been mistaken for beri-beri is quite likely, at any rate the question is one well worth investigation, and in view of the prevalence of beri-beri among many rice-eating peoples, it would be well to examine the various native drinks and beer made from this cereal.

The occurrence of cases of beri-beri among the fighting men and followers of the contingent of Indian troops in China will attract further attention to the disease.

SODIUM BISULPHATE AS A WATER PURIFIER

MOST of our readers will have read the interesting discussion at a recent meeting of the Epidemiological Society on the means suggested by Dr Louis Parkes of preventing water-borne typhoid which has played such havoc with armies in the field in the recent American-Spanish War and in South Africa. It appears from the experiments of Dr Louis Parkes that a solution of sodium bisulphate in the proportion of one gramme of the salt to a pint of water is capable of destroying the bacillus of typhoid fever after fifteen minutes' contact. While it possesses this valuable property, the salt in this proportion does not appear to have any laxative effect and, in fact, it rather tends to increase the palatability of the water to the thirsty drinker. It is obvious that for this substance to be of any practical value, the salt must be in such a form that it is capable of being carried about in a very portable form, and to attain this end the enterprising firm of Messrs Burroughs, Wellcome & Co have issued the salt in the form of their well known "tabloids." In the form of "tabloids" any one can carry about in his pocket a sufficient quantity of the salt to ensure the purification of a considerable quantity of drinking water. A more compact and simple form of purifying water it would be difficult to imagine, and we hope to hear of the extended use and success of this simple means of purification.

THE "PRACTITIONER'S" MALARIA NUMBER

THE March issue of our admirable contemporary is devoted entirely to the subject of malaria, and is therefore specially worthy of the attention of our readers. The articles are all good as may be guessed from the names of the writers.

Dr P. Manson discusses the ætiology and treatment of malaria, and in one place raises

an interesting question as to whether some other animal may not share with man the dubious honour of being the intermediary of the malarial parasite. If Veterinary-Captain Burke's views should hold good that *surra* is æstivo-autumnal fever in horses, it would show that man has not the privilege all to himself. It is impossible to do justice to this article by mere quotations, it should be studied as a whole. Dr D. C. Rees gives a good *résumé* of the parasitology of malaria, which is well illustrated. Dr Sambon is nothing if not original, and he pleads for the use of the term "intermittent" fever to cover what is usually called "malaria" or "paludism." It is obvious that many objections may be taken to this wide use of the expression "intermittent," we would prefer the word "ague" as Dr Duhamel recently proposed, but neither of these terms nor "gnat fever" is required. If purists begin by refining our medical terms where are we to end? How few medical names are correct from the purist point of view? Dr Sambon makes a more useful suggestion when he proposes to revive the term, used by Hippocrates, "semi-tertian" for æstivo autumnal fever, which latter phrase, however true for Italy, by no means applicable to India and the tropics. A most interesting note on the genus *Anopheles* by Mr E. E. Austen, of the British Museum, is also given. In fine, the whole number is well worth study, and should be most useful to many of our readers. The monthly special numbers of the *Practitioner* are proving a distinct success, recently there was published a special *Insurance* number which was most valuable.

MR JONATHAN HUTCHINSON ON CALCULUS

THE following is extracted from the *Polyclinic* (March 1901). It does not show a very intimate acquaintance with the recent literature of stone in the bladder —

"There is as yet much that is exceedingly obscure in this matter. We do not know why stone in the bladder should be so common in Norfolk and so rare in the north of Ireland, nor why the vegetable feeding Hindoos should so often form uric acid calculi. International observations on these points may become very valuable, and should be collected in all parts of the world, and should be authenticated and illustrated by specimens."

In India, Parsees, Mussulmans, and Hindoos, all suffer. Those who have investigated the facts as to the predisposition to calculus in England have almost unanimously believed that inherited tendency to gout is an important factor. Probably they are right to some extent, but how to explain on this hypothesis the remarkable prevalence of stone in Norfolk, where gout is not more common than in other parts of England? Or above all, how explain its frequency in parts of India where gout is unknown? The difficulty of explaining the prevalence of stone in India by reference to any peculiarity in diet is very great, and when we remember that it is nearly unknown in negroes, the problem becomes almost insoluble. Had it been prevalent throughout the tropics in equal frequency, we might have believed that the too profuse action of the skin, by

favouring concentration of the urine, was an important factor. But the exemption of many large tracts and some entire races discredits this suggestion.

Dr Vandyke Carter in 1873 examined the calculi in the Bombay Museum with great care. The principal result was the observation that a larger proportion in India have oxalate of lime as the nucleus than in England, and a smaller one uric acid. Thus in an average of three English museums, uric acid or urates form the nucleus in 71.79 per cent, but in Bombay of only 58.30 per cent. On the other hand, oxalate of lime is the nucleus in Bombay in 38.55 per cent, but only of 18.87 per cent in the English museums. A very large proportion of the Bombay calculi were from natives of Bombay itself, some from the Punjab.

Dr Playfair (*Edinburgh Medical Journal*) has noted the infrequency of stone in the Bengal provinces, and contrasts it with the frequency in the north west. He attributes the difference to the use of rice in Bengal, and of a coarse wheat flour in the north west provinces.

We recommend the writer to consult our special "Stone" number or Major E Roberts' article on the Distribution of Vesical Calculus in India in the Transactions of the first (? and last) Indian Medical Congress.

THE CENSUS

The following extract from the Government Resolution on the Census of 1st March 1901 sums up briefly the main facts—

"The general results thus reported are set out by Provinces and States in the table attached to this Resolution, which shows that the population of India including the Native States, has risen since 1891 from 287,317,048 to 294,266,701, or by 2.42 per cent. By deducting for the purpose of comparison, the population of tracts now enumerated for the first time, the proportionate increase for the ten years is brought down to 4,283,069, or 1.49 per cent, as compared with 11.2, the actual rate of increase between 1881 and 1891. This result is in the main due to the figures in the Native States, which have fallen from 68,50,479 in 1891 to 63,181,669 in 1901, or a decrease of 4.34 per cent. The figures in British India in the corresponding period show an almost equivalent rate of increase, having risen from 221,266,569 in 1891 to 231,085,132 in 1901, or an increase of 4.44 per cent. The statistics reflect the vicissitudes of the period to which they relate but it would be premature to conjecture how far the decline in particular tracts is due to enhanced mortality and impaired fertility, or to emigration induced by high prices and the pressure of population on the land."

The figures for the chief provinces show an increase or decrease as follows—

Increase		Decrease	
Assam	12.6 per cent	Ajmere Merwara	1 per cent
Bengal	4.7 "	Berar	4.9 "
Sind	11.8 "	Bombay Presy	1.5 "
Burma	18.6 "	Central Provinces	8.7 "
Coorg	4.2 "	Hyderabad	3.1 "
Madras	7.2 "	Baroda	19.2 "
N W P & O	1.8 "	Rajputana	18.1 "
Punjab	7.5 "	Central India	17.5 "
Andamans	56.9 "	Bombay States	14.4 "
(Native States)		C P States	8.1 "
Mysore	12.0 "		
Kashmir	14.2 "		
Madras States	13.2 "		
Bengal States	13.3 "		
Punjab States	4.1 "		

The mark left by famine and plague are only too clearly indicated by the above decreases.

FIELD HOSPITAL EQUIPMENT IN CHINA

We are indebted to a medical officer recently returned from China for the following interesting notes on field hospital equipment.

"From my experience in China the following modifications in our field hospital equipment are necessary—

1 First and most important is the provision of a real Base Store Depot in which the excess baggage and unnecessary equipment, when proceeding on short expeditions urgently, could be stored. The Medical Department should be quite independent of the Commissariat in this respect. Dhoolie bearers' kits, personal belongings, &c, &c, have been purloined over and over again both in the China and Chitral Expeditions because there was no responsible medical officer to take over our personal effects.

The Commissariat Department has quite too much to do to be converted into a general receiver's depot for each and every detail of the force.

2 A field water cart, like that used by the Russians in China, but of lighter make, and with bicycle wheels, aluminium tank, cooking pots and boilers, should be part of the equipment of each section of a field hospital and of each fighting unit in the field. The immense advantages of such a light, mobile cart, carrying pure water and enabling supplies of soup, tea, or coffee to be got ready at a moment's notice, are incalculable.

The sterilization of operating instruments can also with such provision be carried out on the spot and as required. The great boon that a plentiful supply of water above suspicion always in touch with weary men must be realized in actual experience on the march to be properly appreciated. The wounded it is well known especially after loss of blood, crave for water as a vital necessity, and for preparing soup, tea and coffee the boilers and range on such a cart are much superior to the kitcha equipment at present provided which, I expect, would be found useless in future campaigns in a very cold climate like that of North China.

The water cart would be a distinct improvement, be available in urgent necessity for carrying the arms and accoutrements of men falling out and even occasionally for the transport temporarily of wounded men of units to which it is supplied.

3 Dhanjibhoy's gulling tongas accompanied the field hospital from Peking to Paotingfie and back, and were of great utility for conveying men falling out, sick, and accident cases. If, without diminishing their great strength and suitability for rough roads, they could be lightened in structure, they would become an ideal hospital transport cart.

4 Having inspected the American, Japanese, and German field hospitals, it is fair to state that our own is the best as regards tents and hospital comforts, the ordnance and commissariat supplies, but that the medical and surgical supplies require revision to bring them up to date and abreast of the advances of our science.

Every section should, as in the American hospital scheme, have the same medicines, &c, as the smaller units are just as likely to have men ill with rare diseases as the larger on field service, and if not so provided, one finds oneself stranded away from the Base Medical Store Depot and has to wait weeks perhaps for an indispensable remedial agent, urgently required.

The American scale provides exactly the same drugs for 100 sick as for 1,000, only in proportionately smaller quantities.

Amongst defects may be noted that more use should be made of drugs in tabloid form and the use of concentrated tinctures and infusions introduced.

It does, indeed, seem absurd that one has to resort to an abstruse mathematical calculation from the known composition of Lister's antiseptic solution before one

can dispense Hg cl, for a man suffering from syphilis, either in the form of an outbreak of an old infection or of a freshly contracted attack from recent exposure. There is no reason why syphilis should be ignored, however carefully men are selected before proceeding on field service. The field hospitals have no supply of sulphate of magnesia useful in dysentery—a camp disease, and it is very difficult to prescribe a medicine ready made and avoid opium at present. Many of the drugs and their forms for exhibition are obsolete and cumbersome.

5 Part of the equipment should include rough and ready methods of water analysis, such as nitrate of silver in solution and distilled water as per para 324, F S Code, Medical, with plain instructions for their use, so that the medical officer who daily goes ahead with the advance party to mark out the field hospital camp, select a camp and test the well water available might be able to test the drinking water in an enemy's country without having to improvise such a method.

A microscope should be supplied to each field hospital. In these days of advanced bacteriological diagnoses this has become a necessity, and as a correlative to this instrument of precision, agar agar tubes and culture apparatus, &c., are demanded. The diagnosis of an infection—Diphtheria or Enteric—may turn on the application of the bacteriological test, and be most important for the protection of the troops and is a contingency that might arise at any moment on active service.

At present this is wholly unprovided for with us, whereas the Americans have books on bacteriology and its methods as part of their field hospital equipment.

The provision of aluminium splints instead of wooden or wire ones is a distinct requisite. Their advantages in rough usage, readiness of application and easiness in sterilization, and being used over and over again, there fore, are quite apparent.

THE ORIENTAL MEDICAL REVIEW

We understand that Dr Hem Chandia Sen, Teacher of Materia Medica at the Campbell Medical School, Calcutta, intends to bring out a quarterly medical paper devoted to oriental medicine. It is intended to thus bring before the English-speaking medical profession all that is valuable in the writings and practice of men practising oriental methods of medicine. Practical notes on oriental methods of treatment and on indigenous drugs will be given. We understand that the first issue, in July next, will contain an article on the treatment of the continued fevers of India and on the use of gold and snake venom.

We can imagine that such a magazine under the intelligent direction of Dr Hem Chandia Sen may be of the greatest interest and value, and we look forward with interest to its publication. The annual subscription is fixed at Rs 4 only.

A NEW (P) FEVER IN THE PHILIPPINES

ASSISTANT-SURGEON B L WRIGHT of the U S Navy describes (*Philadelphian Medical Journal*, February 9th, 1901) a form of fever which is said to be extremely common among new comers in the Philippines. It is called "Cavite Fever" from its frequent occurrence at that port. Fully 70 per cent of the garrison at Cavite have been attacked. The symptoms are given as follows.—

Cavite fever is an acute infectious disease, characterized by an abrupt onset, high temperature, severe

muscular pain, and extremely tender and painful eye balls. The predisposing causes are high temperatures, low, damp localities, overcrowding, and possibly the close proximity of salt water. The exciting cause is supposed to be, and undoubtedly is, micro organismal, although as yet nothing is known of its nature. Of the pathology we know nothing as deaths from this disease have not been observed. The period of incubation is from two days to two weeks. The disease is of sudden onset, usually commencing with a slight chill, in a few hours the temperature rises to a 104° or 105°, and may even reach 107°.

The face is flushed, the eyes injected, extremely painful and tender, the skin burning hot, the pulse full, strong and rapid, the respiration accelerated, and the mind frequently delirious, the patient extremely prostrated.

Nausea and vomiting are usually present, the bowels constipated, and the urine scanty and high coloured. Headache and muscular pain are severe, the latter usually located in the muscles of the back and legs, but occasionally in those of the arms and shoulders. The temperature usually continues high, for from three to five days, when it falls by crisis, the muscular pain may or may not cease with the fall of temperature.

Relapses are not common, but second, third, and even more attacks are not unusual.

This disease is most apt to be confounded with dengue, but the absence of an afebrile period, and the rash, followed by a second febrile attack of definite duration, enables one to distinguish it from that disease. The absence of catarrhal symptoms separates it from catarrhus epidemicus.

The treatment should be as follows. Rest in bed, with a liquid diet. The bowels should be freely opened by a brisk saline purge, and kept regular by small and frequently repeated doses of calomel. Such drugs as antipyrin, phenacetin, or acetanilid, and small doses of quinine should be administered.

These symptoms are not very characteristic, and in many respects the disease resembles a form of influenza, though why it should be confined, as is stated, to the peninsula of Cavite is not clear.

THERE seems to be some doubt as to the identity of the mosquito which has been used in the yellow fever experiments in Cuba. It is usually called *C. fasciatus* (Fabi). The report from which we have quoted discusses its identity with *C. tinias* (*sic*) which is obviously a misprint for *C. taeniatatus*. Theobald (in the report printed "Theobolt") separates this species from the *Culex*, and places it in a new genus, *Stegamina* which is not mentioned by Giles.

THE *Culex fasciatus* is found in the island of Porto Rico (Giles), whereas the *Culex taeniatatus* has a more widespread distribution, and, in fact, is the species originally described by Giles as *C. Rossi*, which is noted as a very cosmopolitan species. Giles thinks (p 218) that it is improbable that *C. taeniatatus* is identical with *C. fasciatus*, as the latter has three white bands on the proboscis, whereas Weid describes the *C. taeniatatus* as being "without any bands" on the proboscis.

THE 16th Annual Report of the Countess of Dufferin's Fund has been published. The Report

commences with recording the close and sympathetic connection between the Fund and Her late Majesty the Queen-Empress Victoria, and gives also the appeal of Her Excellency Lady Curzon to the people of India for funds to further the extension of the good work of this Association. The report shows, however, satisfactory evidence that in many parts of this country encouraging success is being slowly attained. If the efforts of this Association do not always "command" success there can be no manner of doubt that they "deserve" it.

In the *Deutsche Medicinische Wochenschrift* (November 22nd, 1900) Zeimann has an important article on malaria as seen in Kameroun and other parts of German East Africa. He has repeatedly found cases with scarce any rise in temperature in which nevertheless parasites were found going through their usual course of evolution. These were anæmic cachectic cases with a past history of fever. In negroes he notes that subjective symptoms of fever may be absent or slightly marked, even when the parasites are present in the blood. His observations as to the supposed immunity of adults differ much from those of Koch. In a large series of adults and children Zeimann found 23 per cent of adults affected and 37 per cent of young children. He decided against adult immunity, but admits a degree of increased resistance compared with children. He was able to experimentally produce malarial fever in seven adults, with an incubation period of ten to twelve days.

WE have received from Veterinary-Captain R. Burke, F.R.C.V.S., a pamphlet on "Pernicious Malaria or Surra in Animals." The pamphlet is highly controversial, and to one who has not been able to follow the earlier stages of the controversy it is not easy to understand. Captain Burke gives as synonyms for Surra, æstivo-autumnal fever, pernicious malarial fever, malarial hæmoglobinuria, and many other names. The pamphlet is largely taken up with the vigorous exposing of the opinions of Captain Pease and other Veterinary-Surgeons. We would much have preferred that Captain Burke has given us a few pages clearly and simply describing the symptoms and pathology of the disease, also an account of the actual parasitology of the blood, which, however, he has apparently done in other works, as "The Tropical Diseases of the Horse."

We are unable clearly to ascertain what view Captain Burke takes, his pamphlet shows signs of an extended reading of modern work on malaria, but if he intends us to understand that the organism which produces surra is identical with the organism of æstivo-autumnal fever in man, we are afraid that we must admit the case to be non-proven, though there is no doubt that the disease

is due to a protozoal organism variously called *Trichomonas Evansi*, or *Trypanosoma Evansi* (after the capable surgeon who first described it), and that it is one of the rapidly increasing number of organisms which belong to the same group as the malarial organisms, but to be akin to malaria does not prove identity, though the word "malaria" is nowadays loosely applied to parasitic disease of the blood of birds and other animals.

WE are glad to see that Dr. J. W. W. Stephens in an article in the *Lancet* (March 23rd, 1901) has been more explicit in his account of his views on blackwater fever than we found him to be in his report to the Royal Society. He concludes his most interesting article with the statement that "*blackwater fever is essentially a malarial infection in which quinine is the most common immediate determining causes of intoxication*." Just as the most common cause of hæmatophrynuria is sulphonal, yet it is not denied that rarely this symptom may occur in those who have not taken sulphonal.

We cannot believe that quinine alone is the most determining cause. What about Italy and India where quinine is used by the ton, and hæmoglobinuria is the rarest of complications. In fact it can only be said to be at all common in the *terai* districts, where severe forms of malaria prevail. Blackwater fever in natives of Africa has been reported, but Dr. Stephens thinks such cases are due to bilharzia infection.

A WRITER in the *Philadelphia Medical Journal* (2nd March 1901) remarks on the great influence of the example of Her late Majesty Queen Victoria in making acceptable the use of chloroform in labour. It was administered to the Queen in 1853, a few years after its introduction, shortly after the *Lancet* had pronounced its use in ordinary labour as not "justifiable." The writer then states that the Queen was able to congratulate herself in her personal participation in one of the most notable achievements of her reign.

THE Editor of the *Polyclinic* appeals for collections of vesical calculi for the Museum of the Post-graduate College, London. Mr. P. J. Freyer has lent the museum his large collection of stones removed by litholapaxy, but Mr. Jonathan Hutchinson wants unbroken stones. Perhaps the East Anglian Surgeon who clings to lithotomy and the supra-pubic operation may be able to send specimens. In the stone districts of India few uncrushed stones are to be found.

THERE are advantages to science in having a medical man as Governor of a country. We note that in Cuba, where Major-General Leonard Wood is Governor, who is a medical man, there

was set apart for the yellow fever mosquito experiments a sum of 5,000 dollars, and each of the men who volunteered to undergo the experiment were paid 250 dollars each. A few months' "special duty" was all the Government of India could grant to the man who went far to solve the malarial problem.

At the Pasteur Institute in Athens, it has been noted that a malarial chill and fever frequently follow the anti-malarial injection in patients who have previously suffered from malaria, but have had no attacks for a year or more.

CAPTAIN V E LINDSAY, I.M.S., writes to the *British Medical Journal* to suggest the use of the word "Xanthocyte" for the more cumbersome term "red blood corpuscle." It is certainly an improvement, and more convenient than "erythrocyte" which has been coming into use.

BERI-BERI has made its appearance among the troops and followers of the Indian Contingent in China. No disease is more common in the Civil Hospitals in Hong-Kong.

WE hope in next issue to be at liberty to give details of the "big fee" case which is much exercising the minds of Civil Surgeons in the Punjab at present.

WE note in the April number of the *Polyclinic* that the Council of the Medical Graduates' College has agreed to admit medical men residing outside the United Kingdom as "non-resident subscribers." For a half fee of 10s 6d such members shall while abroad receive the *Polyclinic* monthly. Such a concession was necessary, and we hope that medical officers in India will largely avail themselves of the privilege.

DR J W W STEPHENS and Mr Christophers have come out to India, under the auspices of the Royal Society, to study blackwater fever and malaria. We are sure that medical officers in every part of India will cordially co-operate with them. We would like to see a medical officer appointed to work along with them.

THE second issue of the new *Journal of Hygiene* repeats the success of the first number. Of the articles the following are of interest, especially to readers in India, viz (1) an account of Plague in Australia by Dr Ashbaiton Thompson, (2) varieties of *b. coli* isolated from typhoid dejecta by Major W H Horrocks, R.A.M.C., of Netley, and (3) the dust theory of cerebro-spinal fever by Major W J Buchanan, I.M.S., as evidenced in the Bhagalpur outbreaks.

Reviews.

Chloroform.—A Manual for Practitioners and Students. By E LAWRIE, M.B., LIEUT.-COL., I.M.S. London J & A. CHURCHILL, 1901.

It was perhaps fitting that Lieut.-Colonel Edward Lawrie, I.M.S., should signalise the year of his retirement from the post of Residency Surgeon at Hyderabad by the publication of a volume on Chloroform, a subject with which he has been identified for many years past, and in defence of his views on which, and those of his master Syme, he has fought *non sine gloria* for many years.

The introduction to *Chloroform, a Manual for Students and Practitioners*, records in an interesting manner this battle of the physiologists which has waged for the past twelve years. It conveys more than one lesson, and must ever be of interest as an example where a scientific physician and two "mere Indian surgeons" were able to meet the most distinguished physiologists on their own ground and after a battle, not without heat, obtain a victory.

The story, as told by Colonel Lawrie, is as follows—

Wakely and others had found that when animals were poisoned with chloroform the respiration stopped before the heart, but the Committee of the Royal Medical and Chirurgical Society in 1864, who first employed scientific instruments in the investigation, arrived at the conclusion that chloroform is dangerous to the heart and weakens it. In 1879 the Committee of the British Medical Association also concluded that direct paralysis of the heart is produced by chloroform. This was the state of the physiological side of the question when in 1889, at the instance of Colonel (then Surgeon-Major) Lawrie and by the enlightened liberality of His Highness the Nizam of Hyderabad, the first Hyderabad Chloroform Commission was appointed. In the first Commission it was considered to have been proved that Syme's teaching that chloroform can be used judiciously so as to do good without the risk of evil was correct, and that the experiments upon dogs showed that in death from chloroform the respiration always stops before the heart.

To further prove the truth of these principles the second Chloroform Commission was appointed, consisting of Colonel Lawrie as President, Dr (now Sir) Lauder Brunton, Surgeon-Major Bomford (now Principal of the Medical College, Calcutta), and Dr Rustomji as members.

This Commission published its large and valuable report, and claimed to have proved "that the normal fall of the blood-pressure produced by chloroform is harmless, and cannot therefore be produced by weakening of the heart." "Chloroform produces an after-effect,

which is dangerous if it is given during struggling and irregular breathing, but it can be used with perfect safety as an anæsthetic provided, as was long ago pointed out by Syme, that the breathing is properly looked after, and death can only take place from overdosing."

A prolonged controversy ensued, and it became necessary to perform further experiments in order to demonstrate precisely how the fall of the blood-pressure which chloroform produces is brought about. This further inquiry was entrusted by the Nizam's Government to two distinguished Cambridge physiologists, Drs Gaskell and Shore. They attempted to decide the question by a new method, *viz*, the famous "cross-circulation experiments," which consists in cross-connecting the circulations of two animals in such a way that the brain of No 2 shall be supplied with blood entirely by No 1, a very difficult task. Drs Gaskell and Shore concluded from six experiments that the fall of the blood-pressure under chloroform was entirely due to weakening of the heart, this conclusion being in direct antagonism to the verdict of the Hyderabad Commission. This view was immediately challenged, and experiments repeated at Hyderabad to the number of fifty-three, and in five only of these experiments did a *post-mortem* examination prove beyond a doubt that the brain of the fed animal No 2 was supplied with blood entirely by No 1, and received no blood of its own. From these experiments it was concluded that when chloroform is sent to the brain alone, it produces exactly the same effects as it does when inhaled in the ordinary way, and that when it is sent to the heart alone it produces no effect at all.

The scene of the fight now shifts to London, where in 1894 Drs Gaskell, Shore and Lawrie were at a meeting of the Medico-Chirurgical Society. The question at this meeting ranged around the one point, as to whether the Hyderabad or the Cambridge cross-circulations experiments were to be taken as true. Drs Gaskell and Shore then offered courteously to repeat their experiment in the presence of Colonel Lawrie. The same result was obtained as in the Cambridge experiments, but unfortunately for the value of them, a *post-mortem* examination of the two animals made at Colonel Lawrie's request showed that the cross circulation was not properly established, and that chloroform had access to the brain when it was thought to be going to the heart alone. This fact which vitiates the conclusions of the Cambridge experiments was admitted by Dr Gaskell, in a letter to Colonel Lawrie, dated 8th July 1894. Neither this letter nor the result of a promised further experiment were ever published by Dr Gaskell.

Three years passed before the question of chloroform came again up for discussion, and in 1897, at the Montreal Meeting of the British

Medical Association, Colonel Lawrie again stated his views, quoting the cross circulation experiments at Hyderabad, thereupon Drs Gaskell and Shore maintained that the question had been settled by the results of the experiments at Cambridge, and they appeared to have challenged Colonel Lawrie to show that anything had since occurred to invalidate the correctness of their experiments. Unfortunately for them Colonel Lawrie was able to produce the letter of the 8th July 1894 in which the incorrectness of the experiments was admitted by Dr Gaskell. We can imagine the scene when this letter was read out to the meeting, the victory of the Hyderabad experimenters was decisive.

We think it due to Colonel Lawrie to thus give a synopsis of this long continued battle, it is not often that on a purely physiological matter a couple of Indian surgeons and a distinguished physician have fought on their own ground and beaten distinguished physiologists. To have finally settled the all-important question of the action of chloroform on the heart is no mean achievement, and Colonel Lawrie will be able to carry with him into his retirement the consciousness of having fought a great fight and won it.

There is much else of interest in this handsome and useful volume, which we have not space to linger on. One interesting section is devoted to a series of hitherto unpublished experiments by the late Professor Rutherford, of Edinburgh, to determine the effect of vagus inhibition on the action of chloroform.

One practical point may be noted, which is founded upon Colonel Bomford's discovery of the after fall of the blood pressure, is quoted as follows — "In every case where there is a struggling stage under chloroform, the cap must be removed, and it must not be reapplied until the chloroformist has satisfied himself that no after-effect is being produced."

As a pinch of practical experience is said to be worth an ounce of theory, it is worth noting that in all his long experience of chloroform Syme never had a death from chloroform, whereas, according to the ten years' statistics collected by Mr Roger Williams, there were no less than ten deaths in 12,368 administrations of the drug in St Bartholomew's Hospital, or 1 death in 1,236, whereas in no less than 17,300 administrations at Hyderabad under Lawrie's method, there was only one death, or 1 in 17,300. Such a fact is very difficult to explain away.

We have much pleasure in recommending this book to the notice of readers, and can congratulate Colonel Lawrie on its production.

Diseases of the Anus and Rectum — By D H GOODSALL and W E MILES Part I LONGMANS & Co, London, 1901

THIS is a book that deserves careful perusal, as it represents the actual practice of the day

at St Mark's Hospital for Fistula and other diseases of the rectum, a hospital at which much of the best work on rectal diseases has been done, and which is associated with the names of Salmon and Allingham and other distinguished specialists.

The volume opens with an account of the anatomy of the regions dealt with, an account which for conciseness, detail, accuracy and abundance of illustration is a model of what should preface every treatise on regional surgery.

Abscess, fistula, fissure and piles are the four surgical subjects dealt with in the present volume. Ulceration, stricture, syphilis, tuberculosis, new growths, prolapse and proclivitas are promised in the next. Congenital malformations, injuries and functional diseases will apparently not be treated of. We say apparently because we find that all the inflammations of the rectum are included in the chapter on abscess, an arrangement which is illogical and misleading. In this chapter on abscess we would draw special attention to the diagrammatic representation (Fig 23) of the lower part of the rectum and anus in oblique section, an original diagram which admirably illustrates the anatomy of the immediate surroundings which is very rightly made the basis for classification of the varieties of abscess that may form about the rectum. We would suggest that in a subsequent edition the diagram be amplified by indicating the fasciæ below and above the levator ani which are important as determining the direction of burrowing. The peritoneum might also be indicated without greatly complicating a diagram which helps to elucidate not only rectal abscess but also the windings of fistulæ.

As regards the treatment of ischio-rectal abscess surgeons practicing in India where the knife is so much dreaded will demur to the drastic recommendation that an incision be made into every inflammatory mass in which pus may form, nor are we prepared to admit that this is either necessary or advisable until after palliative measures have been tried. We are also of opinion that the T-shaped incision is not always necessary in order to secure perfect drainage of an abscess in which all the septa have been broken down and only one large cavity remains.

The very long chapter on fistulæ is a complete dissertation on the subject and will be useful to the general practitioner with limited opportunities, especially as all the varieties are illustrated, but it adds nothing to what was previously well known. On the other hand, the next chapter on sinus over the sacrum and coccyx adds considerably to a subject of which the literature is extremely limited.

The volume ends with a comparatively short chapter on piles. Under external piles are included what may be called anal hæmatomata and hypertrophied folds of skin. Their de-

scription here is a matter of convenience. The occurrence of encapsulated extravasations of blood about the anus is more open to question than is admitted. The tissues in this region are not of such density as to limit an extravasation, nor do we ever find it persist when produced by operative interference. "Condensation" of connective tissue may account for the capsule, but it will not explain the existence of venous endothelium, though this may be simulated by flattened connective tissue cells. On the whole it seems more probable that these so-called extravasations are really dilated veins thrombosed or on the way to thrombosis. That such veins are met with is admitted.

The classification of internal piles is one of position rather of pathology, depending on the quadrants in which they are found rather than on distinctive characteristics, venous, columnar or nævoid. The authors seem pledged to a purely mechanical theory of the development of piles and apparently ignore the inherent tendency to hyperplasia of venous tissue which is now generally admitted as one cause of varicose veins. This is the more extraordinary as heredity is recognized, especially in those who are affected under twenty years of age, in whom a tendency to overgrowth rather than dilatation might be looked for. The statement that in tropical countries diarrhoea is said to be a frequent exciting cause of piles does not correspond with our experience, and we regret that the authority is not mentioned from whom the statement is derived.

The volume before us is a sound exposition of its subject-matter and is distinguished by a minuteness of detail in treatment such as could only be expected from surgeons who have daily experience of rectal surgery. The illustrations from original photographs are abundant and excellent save where some of them lack definition. The printers have spared no pains in the get-up, and both authors and publishers are to be congratulated on the first part of a treatise that promises to take a place among the standard works on rectal surgery.

Saunders' Pocket Medical Formulary—By
W M POWELL, M D, London HENRY KIMPTON,
82, High Holborn, W C, 1900

THE issue of the sixth edition shows that this handy little work is being appreciated. Over 1,800 prescriptions culled from authoritative sources are given, and an effort has been made to utilise the newer drugs. The book is interleaved to allow of the practitioner adding to his store of prescriptions, which are arranged alphabetically according to diseases.

The formulary constitutes the main part of the book, but in addition we have posological tables and data for hypodermic medication, some useful hints on incompatibles, diameters of the

female pelvis and the fetal head, diet tables, and surgical memorabilia. The proverbially busy practitioner will find this a useful little book to carry in his pocket or in his conveyance for ready reference.

A Contribution to the Study of the Blood and Blood-Pressure—By GEORGE OLIVER, M.D., London. H. K. LEWIS, London, 276 pages. Price, 7s. 6d.

To one who has to serve many masters working not at the subject of choice but at all things that come in the way of duty (horrible word) the preface to Dr. George Oliver's book brings thoughts of envy. The work which this book embodies has occupied "the leisure afforded by the winters of the past ten years." This being the case, it becomes the duty of the reviewer to judge whether that blessed gift of leisure has been profitably used. There are perhaps few questions of human physiology that have been the object of so much special *research* as those connected with *blood-pressure*, and it must be said that the results have not always carried us very far forward. Of Dr. Oliver's book it may, however, be said that it will be found not only readable but of real practical value to the physician. From the physiological features presented to the enquirer using simple and cheap apparatus, the author passes on to the application of the results obtained to the every day clinical work of the practitioner, and it is this which gives the book its practical value.

It would serve no useful purpose to describe the instruments for estimating hæmoglobin, or for counting the blood-corpuscles. Any one wishing to perfect himself in practical work must get the book and follow the methods step by step. Dr. Oliver's language is simple and to the point. He has not based his results on a few hasty experiments knowing that trustworthy conclusions are most likely to be obtained from the largest possible number of observations. Thus he says, p. 37, "I estimate that not fewer than 40,000 observations have been made with the view of determining the physiological and clinical variations in the chromocytes and hæmoglobin." The data thus collected have thrown some light on the influence of gravity, exercise, work, rest and sleep, digestion, attitude and atmospheric humidity in varying the proportions of the hæmoglobin and of the chromocytes.

As another example of the importance of the study of blood-pressure, I will give Dr. Oliver's conclusions as to the effects of various kinds of *bath*. By their agency [baths] "we can modify the action of the heart (the output and the force of contraction) and the distribution of the blood to the systemic and splanchnic areas."

Our object in selecting these portions of Dr. Oliver's book for notice is like the fisherman's bait to attract and capture readers. Of one thing there can be no doubt, namely, that we have to

thank the good fortune which has provided leisure for ten winters, during which Dr. Oliver carried out the researches now published.

The book is handy in size and well-printed and got up, though personally we do not like to have to read print on shiny paper by artificial light.

Materia Medica and Therapeutics By WM. SCHLEIB, M.D., Univ. of Pennsylvania, Philadelphia. L. F. A. BROTHERS, London. H. KIMPTON.

This volume is intended to afford a condensed yet comprehensive text-book and work of reference on *Materia Medica*, *Therapeutics*, and a range of cognate subjects. Under head of each drug will be found clear and concise descriptions of its properties and physiological action. In addition chapters will be found on "medical," Latin, pharmacy, table of doses, antidotes and incompatibilities. The volume is based on the United States Pharmacopœia, and will be found a concise and reliable work of reference on *Materia Medica*, including the newest drugs. It is excellently printed and of a convenient size.

Diseases of the Thyroid Gland - Part I

Myxœdema and Cretinism By G. R. MURRAY, M.D., F.R.C.P. London. H. K. LEWIS, 1900.

THE name of Dr. G. R. Murray, of Newcastle, is forever associated with the thyroid treatment, one of the most remarkable of the new methods of treatment of the century just closed.

It is, therefore, peculiarly fitting that a book devoted to the treatment of diseases of the thyroid gland should be written by Dr. Murray. Much that is in the present volume was written for the Goulstonian Lectures of 1899 by the same author. The present volume is only the first part of the treatise, and deals with two extremely interesting diseases of the thyroid gland, *viz.*, *myxœdema* and *cretinism*.

After a chapter devoted on the anatomy and physiology of the thyroid gland one follows on *myxœdema*, in which the history, ætiology, symptoms and treatment of the disease are very fully discussed. *Myxœdema* is a disease of apparently capricious distribution; it is distinctly common in the north of England and Scotland, less so probably in other parts, it is uncommon in France, and in Australia. Isolated cases have been reported from India, Thibet and Cape Colony. As regards India at the time of writing we have under our care a case which has been diagnosed as such, the solid œdema, the facial expression, the loss of hair and other symptoms inclined us to the diagnosis, and the distinct improvement during the two months the patient has been under thyroid tabloid treatment incline us to believe that this is a genuine example of a disease certainly rare in an adult native of the plains of India.

The cases and the photographs liberally supplied in this volume combine to give a very

complete account of the disease. It is now ten years ago since Dr Murray was led to suggest the thyroid extract as a remedy for this disease, and continued use of the remedy has only proved conclusively the depth of his scientific foresight.

The other disease treated of in the present volume is cretinism, which is defined as "infantile myxœdema," i.e., cases in which before the age of fifteen years the symptoms are due to destructive disease or arrest of development of the thyroid gland.

The little volume is one to be commended to all interested in the disease. It must long remain the standard volume on the subject, and the able and interesting way in which the subjects are dealt with make us look forward with anticipation to the second volume of the treatise. The volume is excellently printed and got up.

Current Literature.

OBSTETRICS AND GYNÆCOLOGY

Post-partum Retention of the membranes

—O Maygrier reports two fatal cases of retention of the membranes out of 142 cases in all, a mortality of 1.4 per cent. In sixteen other cases there were signs of infection, but these recovered. In one of the fatal cases, a ligature was placed upon the projecting strip of membrane—Tarnier's suggestion—but it came away without the membranes and digital scraping and clearing out the uterus and afterwards curettage also were employed, but without averting the fatal issue. In the other case not the membranes but the decidua alone was retained and yet infection occurred, digital scraping, curettage and later hysterectomy was performed, but death occurred on the forty-fourth day (acute septicæmia). Prophylactic clearing out of the uterus is therefore recommended. —(*British Medical Journal*)

Intra uterine Crying —Planchu and Reure discuss a case in which Reure heard loud crying of the child *in utero* for more than an hour, nine days before delivery. The patient complained of watery discharge, and as on examination no sign of the onset of labour was found, was ordered rest in bed and vaginal douches of hot water. Instead of the douche, a pear-shaped syringe was used, which was afterwards shown to eject much air with the water. Reure was called because of the crying which was so loud on his arrival that he expected to find the child born. The cries gradually diminished in intensity, but are said to have lasted almost continuously for two hours and a half. On each of the following nine days, foetal movements were felt, and the foetal heart sounds counted to be on an average 135 per minute. The child was born breech first alive, but very asphyxiated and was lost owing to the urgent need of attention on the part of the mother, who was bleeding. No examination of the lungs was permitted. Planchu argues that this case pleads strongly in favour of the theory that the first respiratory movements are caused by the contact of the nasal and buccal orifices with air rather than by the obstruction of the foetal circulation. —(*British Medical Journal*)

The treatment of persistent Occipito-posterior position of the Vertex —Brodliead always attempts to convert an occipito posterior into an occipito anterior position before labour if possible. If diagnosed in the later stages of pregnancy and before engagement has taken place, the patient should be placed in the

knee elbow position for a short time twice a day during the last two weeks. By this means it is claimed that the occiput will rotate anteriorly. A more certain method is to rotate the child forwards by abdominal manipulation during the early stages of labour.

Whilst the great majority of occipito posterior cases rotate forward naturally during the descent through the pelvis, the head may be delayed at any point of its course and operative interference may be necessary. If the vertex remains above the brim, help must be given by forceps or version. The writer recommends version as the preferable operation, unless the obstetrician has had considerable experience of the high forceps operation. If the vertex is delayed in the pelvic cavity owing to deficient flexion, the forehead is pushed up during a pain, and the occiput usually descends and rotates forwards. If this fails, forceps are required. If the head reaches the floor of the pelvis with the occiput still posterior, Dr Brodliead recommends rotation with forceps. The forceps should be applied to the sides of the child's head and passed with the concavity of the pelvic curve forwards in the usual way. By gentle traction, a little at a time, the occiput will turn gradually forwards, and the trunk will usually follow it. The child suffers no ill effects from the rotation. A method which will be found very useful in these cases is manual rotation of the occiput forwards. At the same time a hand placed on the abdomen may push the anterior shoulder forward. If this fails, rotation by forceps should certainly be tried in preference to delivery with the occiput posterior, which is very liable to cause extensive injury to soft parts. —(*American Journal of Obstetrics*)

Puerperal Gas-sepsis —Welch adopts the term "gas sepsis" to designate the important group of fatal puerperal cases in which gas bubbles are found at early autopsies in the heart and blood vessels and often also in the organs and tissues under conditions where we must suppose that gas bacilli and possibly gas have passed from the uterus into the circulation during life. Here belong most of the cases which have been reported as deaths due to the entrance of air into the uterine vein. The most remarkable of these cases is that reported by Graham, Steward and Baldwin of a woman upon whom abortion had been recently produced who during the four hours immediately preceding death became emphysematous over nearly the whole body. At the autopsy gas and gas bacilli were found everywhere throughout the body. In Dalton and Bremer's case, also one of criminal abortion, an emphysematous swelling of the arm and pectoral region was likewise recognised during life. These cases are of importance as demonstrating the invasion of the body by the gas bacillus from the uterus while the blood is still circulating. In Habru and Dobbin's cases, gas was also recognised during life within the wall or cavity of the uterus. In the majority of cases there has been some operative interference preceding infection. The fulminating character of the infection, death being sometimes very sudden, is a notable feature of many cases. In a case of attempted criminal abortion reported by Perkins, the patient died suddenly, and at the autopsy twelve hours later in cold weather, gas was found in the venæ cava, heart and other vessels, with evidences of injury to the pregnant uterus. The case was reported by Perkins as one of death from air embolism, and certainly with as much and even more plausibility than most cases thus reported. After the publication, Dr Perkins sent the uterus well preserved to author's laboratory, where Dr Dobbin demonstrated in the uterine vessels and tissue, bacilli morphologically and in staining reaction identical with bacillus *ærogenes capsulatus*. The author would not be understood to deny the possibility of the occurrence of fatal air embolism from the uterus. A very few of the reported cases are difficult to interpret upon any other supposition, but no case can be considered as positively proven without a satisfactory bacteriological examina-

tion The limitation of gas to the right heart and adjacent vessels may occur from invasion by the gas bacillus, and is not, as often represented, peculiar to air embolism —(John Hopkin's Bulletin)

K N DASS

EXTRACTS FROM THE FOREIGN MEDICAL PRESS

Gelatine as a hæmostatic.—In 1896 Carnot reported that he had obtained good results from the employment locally of a solution of gelatine, in obstinate cases of epistaxis. Since then gelatine has been frequently tried—among other trials being those of a solution of the substance injected into an aneurysmal sac and latterly hypodermic injections of a gelatine solution have been employed to stanch hæmorrhage from internal organs. In the *Deutsche Medicinische Wochenschrift*, No 34 of 1900, Kehr reports a case of hæmorrhage from the bowel, and in the *Muenchener Medicinische Wochenschrift*, No 2 of 1901, Gossner reports a case of hæmorrhage from the pelvis of the kidney, and Frankenburg one of hæmatemesis ex ulcere ventriculi, in all of which 200 c c of a sterilised 2½ per cent solution of gelatine in normal salt solution were injected, and brought about immediate and permanent arrest of bleeding. The solution is sterilised by bringing it to 100°C (115°C destroys its hæmostatic properties) on several successive days, it being then stored in sterilised glass tubes. So far, the only untoward results have been those which were observed by Gossner—much pain at the site of injection, and severe headache. Perhaps if only 3 c c of a 30 per cent solution were used, as suggested by Pensati—no unpleasant symptoms would ensue.

In the January number of *Il Policlinico* Mariani reports that his experiments on animals and his clinical experience convince him that injections of even a two per cent solution of gelatine are undoubtedly hæmostatic.

To promote Anæsthesia.—C Hofman recommends that the following method be tried to induce the patient to breathe quietly, regularly and deeply during narcosis.—When the mask is applied the patient should begin to count backwards from 200, and for the first half minute, at least, of such counting he should receive no chloroform, which should later be dropped so slowly on the mask at first that he may scarcely perceive the transition from pure air to chloroform vapour charged air.—(*Centralbl f Chir*, No 3 of 1901)

An Antipodagral specific.—Hugo Sternfeld states that he has found Quinate Lithia to be "a specific against the uric acid diathesis, as valuable as is salicylic acid against rheumatic joint-affections, or quinine against malaria." The drug, which was introduced by Zimmer of Frankfurt, A M, the inventor, of Equisquine, is sold under the name of "Urasin", but its cost is a drawback, for the daily dose is 6 to 10 tablets of 7½ grains each and 10 tablets cost 1s 2d.—(*Muenchener Med Wochenschr*, No 7 of 1901)

A case of "Lightning-Delivery."—Wilhelm Kunze, of Jena, reports the following case, which is of medico-legal interest.—A married woman, aged 24, II para, was suddenly taken with labour pains at term, and, before she could reach her bed, the child was expelled—falling on the floor. The umbilical cord was ruptured, but no bleeding took place from its cut surface. In about half an hour the placenta was spontaneously expelled, and both mother and child did well.—(*Centralbl f gynæk*, No 5 of 1901)

Treatment of the Umbilical Cord.—For thousands of years the cord has been tied and severed at a distance from its umbilical insertion for obstetrics—as distinguished from gynæcology—is nothing if not

conservative. At last, however, general surgical principles have been acted on in the treatment of the sacred navel string. In the *Monatsschrift f Geburtshilfe und Gynækologie*, December 1901, Martin, of Greifswald, and in the *Wiener Klinische Wochenschrift*, No 5 of 1901, Stoltz of Graz report that they have treated a large number of new born children as to their umbilical cords thus.—The cord is tied with sterilised silk ligature at skin level and then divided outside the ligature with sterilised scissors. The results have been excellent—and much more æsthetically beautiful than those obtained by the time honoured method.

Atropia in Intestinal Obstruction.—Nowadays of course surgical interference is the rule in such cases, but as there will always remain, especially in India, many cases which refuse operation it may be well to note that Dietrich reports a case in which he employed hypodermic injections of small quantities (¼—½ gr) of atropia sulph. The case recovered, and as other similar cases have recently been reported this means of treatment should be given a trial in those cases which refuse operation, and which, if treated on the principle of masterly inactivity, will not recover.—(*Muenchener Med Wochenschr* No 8 of 1901)

W D SUTHERLAND, M B

Correspondence.

OPHTHALMIC WORK IN INDIA

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Referring to my letter in the March number of the Gazette, and to Captain Smith's reply, may I add a few remarks? Our most experienced men learn little, and impart less, from their experience because they have no time to digest their material, and by simply piling case upon case get mere glimpses and ideas which are not followed out. To illustrate the matter I cited Captain Smith's article on "Extraction of Cataract in the Capsule," because it was the most recent ophthalmic contribution at hand. It contains a very interesting and valuable description of the operation, but not a scrap of evidence that would induce one to perform it when the ordinary operation is practicable. I am very glad that Captain Smith intends to supplement the information already given. For the average operator it is quite insufficient to know that by an extraordinary amount of practice, which he can never hope to obtain, he might reduce loss of vitreous at the operation to a proportion which, in my experience, is still much higher than need complicate ordinary extraction. (See some remarks in an article to be published in the special ophthalmic number.)

Captain Smith says "extraction in the capsule has been entirely worked out by Indian operators." It would be more correct to say that India is the only country where the operation survives for cataracts other than those with opaque capsule and tremulous and dislocated lenses. It is recognised as an old operation revived by the brothers Pagenstecher, and modified in detail since Macnamara's name is not especially associated with any feature of the operation as now performed. The really important development, expression of the lens without the introduction of a spoon, is a natural evolution and cannot be claimed as due to any one Surgeon.

Yours, &c,
H HERBERT,
Major, I M S, Bombay

THE ALLEGED SUSCEPTIBILITY OF THE GOORKHAS TO TUBERCLE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Knowing as I do the scrupulous care which characterises all Captain Lairs work and the judicial spirit in which he approaches the consideration of his facts, it is with diffidence that I venture to join issue with him on the subject of his article that appeared in the *Indian Medical Gazette* for February. In the first place I do not think it has been demonstrated conclusively that the temperature of a healthy Goorkha is lower than that of a European as a general rule. In patients recovering from pneumonia and other acute illnesses, a subnormal temperature persists for a longer period than is perhaps usual among

Europeans, but when recovery is thoroughly established, I always find that the temperature reaches the normal level when taken in the mouth. Captain Lalor mentions that throughout his experiments the thermometer was placed in the axilla, and this, I think, somewhat vitiates his conclusions, for I have frequently noticed the temperatures subnormal when recorded by my hospital assistant, and on testing the cases I have found that the index of the thermometer when placed in the patient's mouth reached the normal point. Moreover, since reading the article referred to, I have taken the temperature of twelve men in the regiment haphazard, and have found them all normal by the mouth.

But my chief object in expressing doubts as to the correctness of Captain Lalor's premises is with a view to disputing the conclusion at which he arrives when he states that the Goorkha is specially predisposed to pulmonary phthisis. Before reading his interesting article I had frequently heard and read of this peculiar susceptibility to tubercular disease on the part of these hardy hill men, and having considered the question carefully during the period of nearly four years which I have spent with the 4th Goorkhas, I must protest against the dictum as being really opposed to the facts. Indeed on the contrary, I am disposed to maintain that the Goorkha is, *ceteris paribus*, rather resistant to tubercular infection, meaning by the term Goorkha, the man born and bred in Nepal, and not the product of cantonment life born in the cramped married lines, poorly fed and poorly housed, and known as the "line boy".

When one considers that the amount of cubic space per head allotted by the Bengal Barrack Regulations for native troops in hill stations and in so called "hill stations," is, I think, 450 cubic feet (I write from memory, and am not quite certain of the exact figure), and that in some company barracks the cubic space actually found on measurement in my own regiment was only 295 cubic feet per man, the conclusion to which I am forced is not that the 10 or 12 cases of tubercular disease that occur annually in each Goorkha regiment point to a marked race susceptibility to phthisis, but that the Goorkha must in reality have a strong natural resistance to tubercular infection not to show an admission rate three or four times as high for that disease.

In 1899 I drew up some tables comparing the admissions per annum for tubercle and pneumonia in the different companies of the 4th Goorkhas, and was able to show an almost definite inverse ratio between the incidence of those diseases and the available cubic space per company. Two companies, A & G, had their barracks enlarged about ten years ago, and the number of tubercle and pneumonia admissions from them has within the last five years been trifling. On the other hand, D Company, with the smallest amount of cubic space per head, has invariably held the highest place as regards the admission rate for those diseases.

I have never been able to understand why the quartering of troops in hill stations or quasi hill stations should be considered a reason for stinting their supply of fresh air in barracks, and I am convinced that were Sikhs, Punjabis or Pathans given the same limited cubic space, they, or any other race, would soon show an apparent special susceptibility to tubercle. As long as we try to explain the unnecessary loss to the Indian army every year of some 140 first-rate soldiers (i.e., about ten men per battalion invalidated or dying) by attributing the fact to some mysterious "predisposition" to tubercle, so long will the root of the evil be left untouched. Let the Goorkha regiments be supplied with at least the same amount of cubic space in barracks as is allotted to all other native troops, and we shall hear less of this peculiar "tendency to pulmonary phthisis," and there will be no necessity to experiment with an extra prophylactic issue of sugar as Captain Lalor ingeniously suggests.

SHANGHAI, CHINA }
EXPEDY FORCE, }
14th March 1901 }

VICTOR E. LINDESAY,
Captain, I.M.S.,
1st Battalion, 4th Gurkhas.

BERI BERI AMONG TAMILS IN RANGOON

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Dr Tertius Clark in a very interesting letter draws attention to the rarity of beri beri amongst Tamils in the Straits Settlements, and asks what nationality were the Hindus mentioned in a paper of mine on this disease (I.M.G., September 1900).

In reply I would mention the men thus classed as Hindus were so classed in accordance with the general classification used in Government hospital returns, but I would also assure him that the very large majority of these were Tamil speaking men from Southern India. Roughly the patients thus classed as Hindus came from two districts, Chittagong and Southern India, but chiefly from the latter place.

Those who came from Southern India were nearly all Tamils, and so much so was the case that I had to choose Tamil speaking Hospital Assistants to place in such charge of the wards where these patients were kept for treatment in order

that they could make their wants properly understood. As far as the correct diagnosis of the disease is concerned, I believe the cases were correctly classed as beri beri, for considerable care was taken in the observance of their signs and symptoms, and many of the cases were seen and diagnosed by Captain Duor, I.M.S., and Captain Rost, I.M.S., as well as by myself, and I found the opinion that so far from being immune to this disease Tamils were, if anything, especially prone to be attacked.

Since writing the notes Dr Clark alludes to, I continued to collect and classify the cases up to the time I was transferred from the Rangoon Hospital last year, and the figures thus obtained are closely similar to those mentioned in my paper. I find by reference to the notes that during the three years, July 1896 to July 1899, altogether 944 cases of beri beri were admitted for treatment, of which 769 were classed as Hindus, or roughly 80 per cent., and that the figures for the years July 1899 to July 1900 were as follows: Total number of cases 389, of which 312 were Hindus, or again roughly 80 per cent. These last figures were compiled for me after I had left the hospital, and I had no idea they would so closely correspond till I examined them on the question raised by Dr Clark. I therefore believe whatever the explanation may be there is little doubt that in Rangoon at least Tamil speaking natives suffer markedly from beri beri.

As regards the diet question the remarks made in my paper were intended to be very general, as I had found on going into the question that the results obtained were very confusing and contradictory.

One fact of interest connected with the large number of Hindus attacked is the habit these men indulge in of drinking rice *canyee*, and on enquiry I found that Mahomedans and Burmese do not do so to anything like the same extent. According to many informants Hindu women are not given *canyee* unless there is plenty of it, nor for the same reason do children under 15 years of age get it either, chiefly on the plea that they do no work and therefore do not deserve it. On looking at the figures obtainable from the Rangoon Hospital for years 1896—1900 (as below) —

Year	Total	Died.	Males	Females	Hindu	Mahomedan	Burman	Other classes
1896-97	224	100	177	47	166	26	27	7
1897-98	364	178	327	37	319	27	11	5
1898-99	350	188	316	40	284	40	16	7
1899-1900	389	184	324	65	312	37	21	19
	1,338	645	1,144	189	1,081	130	75	33

One is at once struck with the small number of women attacked with beri beri, and this is all the more noticeable since women and children under ten were classed together. The number of children however attacked was very small, and I have frequently remarked on the rarity of Beri Beri amongst children to other medical officers in Rangoon. Of course I have pointed out before the majority of patients attacked were Hindu coolies from Southern India, who might be expected to leave their families behind when they come over for harvesting operations in Burma.

But still there is a considerable Hindu population in Rangoon and its surroundings, consisting of men who have come over from India and settled down with their wives and children, and the number of women and children who suffer from beri beri is, I believe, smaller than it would be if this disease was in the habit of attacking both sexes and children indiscriminately. With these facts in view I managed to get the amount of alcohol estimated in *canyee* fermented for varying periods of time, but found even after keeping it fermenting for the full limits of time the Hindus are ever in the habit of doing, the amount of alcohol in it was too small to be in any way accountable for the symptoms which are classed under the heading of beri beri. Since this time Captain Rost, I.M.S., has discovered in rice *canyee* the organism he has described as occurring in the blood of patients suffering from beri beri, in fact, unless I am mistaken, the organism was first discovered in *canyee* and later on in the blood. Whether this organism is in any way connected with the origin of this disease I am unable to express any opinion at present, and I would refer Dr Clark to the article by Captain Rost, who has and is going fully into the subject. Still whatever may be the cause of this chain of symptoms known as beri beri, I think that a poor diet devoid of nitrogenous elements combined with insanitary surroundings certainly renders people more likely to be attacked by this disease.

Yours, &c,
C. BARRY,
Captain, I.M.S.

MANDALAY

SUPRA RENAL EXTRACT IN HEART DISEASE.

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I intend to publish a second paper on the use of the supra renal capsule in organic heart-disease.* Will you kindly ask the readers of your journal to send me the reports of their cases as follows—

- I The condition of the heart and pulse and also the pulse rate
- II The effect on the heart and pulse and also the pulse rate, within ten minutes after the supra renal powder, three grains, is chewed and swallowed without water by the patient

Yours, etc,
SAMUEL FLOERSHEIM, M.D.

THE GREAT MEDICINAL VALUE OF PLANT LYGODI NUM PINNATIFIDIUM

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I desire to draw attention to the following plant—

The parts used—The roots—they are black in colour externally, and slightly whitish internally. From a knotty bulb numerous rootlets are given off. Inodorous, tasteless, this fern abundantly grows in any part of Bengal and Behar, especially on the bank of rivers and in bamboo hedge. They can be had abundant in the rainy season. The plant is known to natives as *Kalacha*.

From the root is made—Oleum Lygodinum pinnatifidum.

Mode of preparing oil—With one pucca seer of mustard oil, pure, mix six chittacks of fresh root and boil till the roots are fried completely, taking care to boil the oil first and then to add the roots in heated oil, the oil is then distilled odour, strong and peculiar.

Action and uses—externally—When applied to the skin or exposed mucous surfaces it does not produce any burning and urtication but produces a soothing effect.

In painful affections of local kind, such as chronic rheumatism of joints and muscles, in sprain of muscles or joints, the oil acts miraculously. In diseases of skin—in scabies, ulcers, eczema, in cut wounds—the oil applied locally is highly beneficial.

Specific action and uses—In carbuncle,—the local application of the oil has the effect of making the surrounding inflammations subside and the slough come out by itself. It is in this particular disease that its great medicinal value is to be found.

MADHUBANI.

B. K. GUPTA,
Assistant Surgeon

PROPHYLAXIS OF SMALL POX

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—If you will be good enough to give me a small space in your journal, I will just mention what occurred to me in a case of small pox in my own house in a little child, aged 2½ years. Small pox becoming prevalent in the railway premises I adopted all ordinary measures to prevent my family becoming infected, and as zymotic diseases will have their way in the face of every precaution, even if one is a medical man (as I happen to be), a little child, as I said before, made itself known to me with what I thought was measles, which seemed to turn to chicken pox, and finally to my astonishment into small pox. These variations and freaks certainly did not puzzle me, but when I came to cogitate on some remedy to relieve the poor little child, it so happened that I did really strike upon something which gave me extreme satisfaction. I started the application of the following from face to feet two days before the maturation stage which relieved the tension and inflammation, hastened desquamation, and instead of a peeling off, the shrivelled eruptions dropped like dead bugs from a cot or any furniture on the application of something really stinging and death producing. And instead of pits, I find a wonderful modification of the real state of affairs, the true result of small pox. It is only a pity I did not try this my remedy earlier. However I throw it open in your column, not for discussion, but for a real personal trial on the faces and persons of the victims of small pox or any suspicious eruptive fever whose eruption is a prominent symptom of study and distress to the physician. The external application is as under—

R. Vaseline	oz. 11
Glycerine	oz. 11
Acid Carbolic	oz. 11
Ol. Eucalyptus	oz. 11
Tinct. Opi	oz. 11
Sweet Oil	oz. 11

Ft application

To be applied morning and evening all over the body with a fine swab

Belgaum

Yours, &c,
M. N. RYLANDS,
Reid Asst Surgeon,
Railway Apothecary, S. M. Ry

* For first paper see New York Medical Journal, October 6th, 1900, pp 651-652. 218, East 40th Street, New York, 18th February, 1901

THE CAUSES OF HYDROCELE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I beg to submit my opinion about the causes of hydrocele as follows—

I hope you will kindly publish in your Gazette

Water is also one of the causes of hydrocele

With regard to the remarks on the causation of hydrocele in the January 1901 (end November 1900) Indian Medical Gazette, I beg to give my opinion, as my experience that the cause of hydrocele in a very large number of cases is also water. Those people who made use of Ganges water in Patna district (Behar) suffered less from hydrocele than those who drank and used well water. Hydrocele at Nagpur (C. P.) is less now than when people did not drink and use pipe water.

BUDNUR MAIN DISPENSARY,
Betul, C. P.

Yours, &c,
H. C. GANGULY,
Hospital Assistant

BLACK WATER FEVER IN DUARS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Referring to the subject of cholera on which I wrote to you in December last I give you some notes of the following experience. Towards the close of last rains in a dry hot break, I was sent for by the Manager of the Tea Estate, and found that in one section of the cooly lines a number of them had died after a very rapid illness which appeared to have been cholera. Soon I found that it was something else, viz., that strong healthy men and women were taken ill and in three or four hours fell into a collapse and died. I got *pushtas* for the patients and used all antithermal remedies and in this way saved about twelve cases. When the sickness was at its height (fourth day of epidemic) a storm with drenching rain came, and in the following morning there was not a single sick person in the lines. There was much discussion as to the nature of these attacks. I think they must be attributed to the abnormal heat.

I have had several cases here of fever of the black-water type. It is very characteristic, it seems to occur at any time of year. It is rapidly followed by a depression of the cardiac system, some patients have had second attacks and are left with permanent cardiac weakness. The urine is voided in large quantities of a thick gummy consistence. If kept, it became semi-solid like a clot. Sickness and vomiting was excessive in some cases and in one case diarrhoea. Jaundice is often well marked. The nerve prostration is a marked symptom. Instant removal of the patient from his environment I find very effectual, beer and sodawater I find very useful.

THE DUARS, April 1901

Yours, &c,
A. J. COPPLESTONE, M.B.

[We shall be obliged if any medical officer resident in the Duars can send us an account of black water fever in those parts. The visit of the Royal Society delegates to India will, it is hoped, throw more light on the occurrence of this symptom in the Duars.—F. D. I. M. C.]

Service Notes.

THE United Service Gazette (March 23rd) notes that miniature medals may now be worn with mess dress, but not otherwise.

LIEUTENANT COLONEL S. O. B. BANKS, I.M.S. (Bombay), is permitted to retire with effect from 12th November 1900. He entered the I.M.S. in October 1866, and was recently P.M.O., Nagpur District.

MAJOR P. MULLANE, I.M.S., 2/3 Gurkha Rifles, has been granted one year's leave on urgent private affairs.

LIEUTENANT COLONEL T. J. MCGANN, F.R.C.S., I.M.S., recently P.M.O., Bangalore District, has, on retirement from the service, accepted the appointment of Durbar Physician, Mysore, vice Lieutenant Colonel Benson, I.M.S., on leave.

It is some satisfaction to know that the relatives of the fanatic who murdered Captain D. C. Johnston, I.M.S., at Lorain on January last, have been made to pay up a fine of Rs. 1,000. The murderer is reported to have died of pneumonia in jail.

LIEUTENANT COLONEL J. P. GREANY, M.D., I.M.S., Civil Surgeon of Poona, has been granted six months' extension of leave.

LIEUTENANT COLONEL FRANKLIN, I.M.S., Inspector General of Civil Hospitals, Punjab, has been granted five weeks' privilege leave.

THE services of Lieutenant-Colonel J. Duke, F.R.C.S.I., I.M.S., have again been placed at disposal of the Military Department.

CAPTAIN W. HORE, I.M.S., Residency Surgeon, Persian Gulf, is granted nine months' compound leave.

CAPTAIN HUDSON, I.M.S., recently appointed to the Assay Department, has been granted six months' leave.

DR W. H. MURRAY, M.B., acts for Captain R. K. Mitter as Resident Physician, Medical College, Madras.

ON Captain C. J. Fearnside's going on leave Captain C. M. Mathews, I.M.S., acts for him as Superintendent, Central Jail, Ryabmumdar.

MAJOR H. M. MORRIS, I.M.S., has been granted six months' extension of leave.

No. 2 Native General Hospital, China Force, has returned to India, in charge of Lieutenant-Colonel H. Hamilton and Lieutenant-Colonel Nandi, I.M.S. The other medical officers originally attached to it, viz., Captains F. Wall, C. A. Johnston, F. H. G. Hutchinson, I.M.S., and Lieutenants McPherson, I.W.F. Rait, W. F. McKenchie, P. P. Atal, are detained on various duties in Hongkong, Shanghai, and further north. It is rather absurd to know that this hospital was never opened for the reception of patients. The tents indeed were pitched, but the stores were not unpacked. The Native sick who might have been treated in this hospital were sent to a "Station Hospital," at Kowloon, on the mainland opposite Hongkong. For some extraordinary reason not easy to understand these patients were put under the charge of a Medical Corps Officer, Major Browne, who had the following medical officers to assist, viz., Captain Hutchinson, I.M.S., Captain Browne, I.M.S., Lieutenant P. P. Atal and Lieutenant Sloan, I.M.S. The sick were housed in sheds added to the Kowloon Hospital, and this institution was run upon military "station hospital" lines. We know what that means.

DURING the winter no less than seven sections of Native Field Hospitals were quartered at Hongkong.

Viz: 38/A under Capt. Mulvaney, I.M.S.
 " 62/C under Capt. Knapton, I.M.S.
 " 47/B C under Capt. Hutchinson, I.M.S.
 " 58/B under Capt. Delaney, I.M.S.
 " 6/D under Capt. W. H. Cox, I.M.S.
 " 38/B under Lieut. Cradock, I.M.S.

There was little more than routine garrison work for any one to do.

IN China Capt. Brown, I.M.S., has been in charge of the 5th H. C. Infantry, Lieut. Atal, I.M.S., in charge of 1st Bengal Lancers, Lieut. Sloan, I.M.S., in charge 22nd Bn. Infantry, and the 3rd Madras Infantry, has been in charge of a Medical Corps Officer, viz., Major Browne, R.A.M.C.

We understand that the holding of the medical charge of this regiment by an officer not belonging to the I.M.S., when many I.M.S. officers were available, has given rise to much grumbling, and very naturally so. Such an appointment appears to be entirely opposed to Indian custom and usage. It is understood that the Field Controller refused to pay Major Brown the charge allowance, he then is said to have applied to the war office, but up till early in April had not received any reply though he still held charge of the regiment, to the detriment of an Indian Medical Service officer who should naturally have held the appointment.

WE understand that the P.M.O., Hongkong, has been Lieutenant Colonel Hughes, R.A.M.C.

ANOTHER source of grumbling has been the use of the I.M.S. officers there for that routine of garrison duty so dear to the military medical mind. Although there were 4 Majors R.A.M.C., 2 Captains R.A.M.C. and 2 Civilian Surgeons attached for duty with the R.A.M.C., nevertheless the I.M.S. junior men in Hongkong were placed upon garrison duty with British troops. In a small garrison like Hongkong surely the R.A.M.C. (8 officers) could do their routine garrison duties without taking in I.M.S. men who were otherwise employed. Why an I.M.S. officer (in charge of a special corps) should be told off to do "orderly" officer at a station hospital for British troops for 24 hours every four or five days is hard to see.

ALTOGETHER the lot of I.M.S. officers in China has not been a pleasant one. We in India have suffered from the lack of medical officers, outside medical men have had to be taken on, and all the time hospitals were lying unopened in China, and medical officers were told off to do the "important" duty of "orderly officer of the day." Truly we have much to thank Mr. Burdett-Coutts for.

THE 1st Bengal Lancers were to move from Hongkong to Peking early in April. The 14th Sikhs were moved from Shanghai to Tientsin.

THAT the China force is "over-doctored" is the universal opinion out there. We suffer from the opposite complaint in India.

IT is stated in Hongkong that the main body of the Indian Contingent will not return to India till October next.

CAPTAIN G. G. GIFFORD, I.M.S., gets compound leave for 18 months.

CAPTAIN C. H. LEECH PALK, I.M.S., goes on furlough for 17 months.

CAPTAIN C. B. HARRISON, I.M.S., is appointed District Medical Officer, Kistna, but acts as Resident Physician, Medical College Hospital.

DR G. E. ANDERSON acts as District Medical Officer, Ganjam, vice Captain Ilington, I.M.S.

LIEUTENANT COLONEL H. McCALMAN, I.M.S., was granted by the Secretary of State six months extraordinary leave without pay. He has been given a good service pension of £100.

CAPTAIN H. B. LUARD, I.M.S., M.B., is placed on temporary half pay with effect from 15th March 1901.

BENGAL ESTABLISHMENT

I.M.S., MAJORS TO BE LIEUTENANT COLONELS

Dated 2nd April 1901

Frederic Daly, Cesar Hawkins
 John Adams Cunningham, M.D.
 Alexander Silcock, M.D.
 Patrick Mullane, M.D.
 John William Rodgers
 James Farquharson MacLaren, M.B.

MADRAS ESTABLISHMENT

MAJORS TO BE LIEUTENANT COLONELS

Dated 2nd April 1901

Arthur Theophilus Lodge Patch, M.B.
 Charles Adams, M.B., F.R.C.S.I.
 Jamshedji Kharshodji Kanga.
 Alfred James O'Hara.

BOMBAY ESTABLISHMENT

MAJORS TO BE LIEUTENANT COLONELS

Dated 2nd April 1901

Alexander Milne, M.B.
 Richard John Baker, M.D.
 William Alfred Corkery
 Sarkies Thaddous Avetoom.

CAPTAIN I. S. S. LUMSDEN, I.M.S., is granted one year's furlough (med. cert.) with effect from 10th November 1900.

RETIRED Military Assistant Surgeons H. W. JOHNSON and W. A. FULLAM are re-employed for plague duty, N.W.P. and Oudh.

CAPTAIN A. G. HENDLEY, I.M.S., is placed on special duty at Pachmarhi from 1st April till 30th June 1901.

CAPTAIN P. F. CHAIMAN, I.M.S., has been granted 24 days "famine" leave.

COLONEL G. HALL, F.R.C.S.I., acts as P.M.O., Lahore District, vice Colonel Joubert, I.M.S., promoted to act for Surgeon General Spencer.

MAY 1901]

CAPTAIN B H WATSON, I M S, is posted to Chanda, C P as Civil Surgeon

MAJOR R P RUSSELL, I M S, Civil Surgeon of Myingun, Burma, has gone on furlough, and has been relieved by Captain J Penny, I M S

MAJOR J W STEWART, I M S, Civil Surgeon of Akyah, has gone on furlough

WITH effect from 1st October 1901, the ancient and venerable *Bayh-o-Bahar* has been reintroduced as the Urdu text book for the Lower and Higher Standard

A SPECIAL Army Order (dated 8th December 1900) gives the rules for the special gratuity to all ranks employed in the South African War

Two of the medical officers of the old East India Company recently died in Scotland, Dr A Fleming and Dr C Douglas. Dr A Fleming, who died at Napier Road, Edinburgh, was seventy nine years of age. He retired from the Indian Army as a Deputy Surgeon General in April, 1874. Dr C Douglas died at Woodside, Kelso, also at an advanced age, having retired from the medical service of the Honourable East India Company as a staff surgeon in May, 1854

LIEUTENANT COLONEL A W F STRETT, I M S, D S O, is granted furlough for 1 year 11 months and 25 days with full "famine" leave pay for the first four months. Capt A Hooton, I M S, acts in addition to his own duties as Deputy Sanitary Commissioner, C R District, Bombay

DR J KELLY, of Dumka, S P, has been in bad health and has taken 2½ months' privilege leave

LIEUTENANT COLONEL R N CAMPBELL, I M S, is appointed a Civil Surgeon of the 1st class, and to act as Civil Surgeon, Dacca, and Superintendent of the Medical School there, *vice* Lieutenant Colonel R Macrae, I M S, who has been granted furlough, compound, for 17 months

LIEUTENANT COLONEL ROVILL, Lieutenant-Colonel E Palmer, and Lieutenant-Colonel H McCalman have obtained good service pensions of £100

DR J L HENDLEY, Health Officer, Port of Calcutta, has been granted 40 days' privilege leave

LIEUTENANT COLONEL D BASU, I M S, has gone to Jessore as Civil Surgeon

CAPTAIN B H DEARE, I M S, Civil Surgeon of Midnapur, acts also as Superintendent of the Central Jail there from 12th April 1901

LIEUTENANT COLONEL W E GRIFFITHS, I M S, acts as Civil Surgeon, Dharmasala

MAJOR F J DRURY, I M S, M B, Professor of Pathology, Calcutta, is granted furlough, and Capt Leonard Rogers, I M S, officiates for him

THE following Medical Officers were at Tientsin during February and March, when that town figured largely in Reuters telegrams —

Lieutenant-Colonel D B Spencer, I M S, S M O
Lieutenant-Colonel G E. Fooks, I M S
Lieutenant-Colonel J A Burton, I M S
Major H Fooks, I M S
Major T C Moore, I M S
Major H. S. McGill, R A M C
Major J M Reid, R A M C
Captain C G Hayes, R A M C
Captain J L. Macrae, I M S
Captain F D Browne, I M S
Captain J J Bourke, I M S
Captain R G Turner, I M S
Captain H F Cleveland, I M S
Captain F S Blenkinsop, I M S
Lieutenant V H. Roberts, I M S
Lieutenant A E Walter, I M S
Lieutenant D N Anderson, I M S
Lieutenant F S C Thompson, I M S
Lieutenant De V Condon, I M S
Lieutenant F Fluea, I M S
Lieutenant A. J. Gidney, I M S
Lieutenant P K. Chitale, I M S,

DEPUTY SURGEON GENERAL THOMAS MURRAY, whose death has been recently announced, entered the I M S (Bombay) in 1846 and retired in 1876. He served in the Mutiny and in the Abyssinian Campaign

SURGEON GENERAL A A GORR, A M S, who died recently, was P M O, Her Majesty's Forces in India, before Surgeon General W Taylor. He wrote "A Medical History of our West Indian Campaigns" and "The Story of our Services under the Crown. He had seen a lot of service and was a C B, and had got a good service pension

At the Irish Graduates' Dinner in London which Mr P T Freyer so energetically manages yearly, the Arnot Medal was conferred on Captain C Dalton, I M S, in attending to a wounded officer at the Tugola while he himself was severely wounded. We gave a full account of this splendid performance, quoting Sir Wm MacCormack's description in our issue for May 1900, p 198

CAPTAIN G G GIFFORD, I M S, is acting as Assistant Physician to the General Hospital, Madras, and Professor of Hygiene (*sub protem*)

CAPTAIN C DONOVAN, I M S, Personal Assistant to the Surgeon General, Madras, has been granted compound leave for twelve months from 5th March on medical certificate

CAPTAIN J JACKSON, M B, I M S, Superintendent, Yerrola Central Prison, is appointed a Magistrate (III class) within the limits of that prison

THE following officers, I M S, are permitted to retire from the service — Lieutenant-Colonel F I Doyle, Lieutenant Colonel A H Leapingwell, I M S, and Lieutenant Colonel M L Bartholomew, I M S

LIEUTENANT COLONEL A R W SEDGWICK, M B, is appointed Medical Officer, Lawrence Military Asylum, Sanawar, *vice* Captain W H Orr, I M S

LIEUTENANT G G YOUNG, I M S, is appointed Resident Surgeon, Baroda, in addition to his other duties

WE note that in Bombay on the retirement of Mr T M Filgate as Inspector General of Prisons, another non medical man, *viz*, Mr H N Alexander, has been appointed

No wonder the medical officers of the Jail Department are discontented

LIEUTENANT COLONEL H P DIMMOCK, I M S, is granted two and a half months' privilege leave from 6th April

AS we hinted at some months ago Lieutenant Colonel J Moorhead, I M S, has been appointed Lecturer on Tropical Diseases at Queen's College, Belfast. Dr Moorhead was for many years a civil surgeon in Bengal and at Suva, in fact he was the last *Bengal* civil surgeon to hold that post in Simla

LIEUTENANT COLONEL DORSON, I M S, having gone on leave on urgent private affairs, Major P W O Gorman, I M S, M D (Brux) D P H (Camb), acts for him as Medical Store Keeper, Main Mir

CAPTAIN C J FFARNSIDE, I M S, of Rajahmundry, has gone on leave. We regret to learn that he has by no means recovered from the malarial fever attacks, the result of his experimenting on himself with infected mosquitoes. We hope that the change to Europe will set him up again

THE furlough of Lieutenant-Colonel G King, I M S, the Sanitary Commissioner, Madras, is for eight months and fifteen days, and will expire on 2nd December 1901

LIEUTENANT COLONEL SARKIS, Lieutenant Colonel Sanjanna, Major F C Pereira, and Captain E M Ilington return to civil employ of Madras from temporary military duty

MAJOR F D C HAWKINS, I M S, is granted compound leave (*m c*) for eight months. He has been for a short time Civil Surgeon of Ghazipur, N W P

LIEUTENANT COLONEL J MORAN, I M S, Civil Surgeon of Jhansi, has been granted compound leave out of India (*m c*) for twelve months, from 3rd April 1901

MAJOR C MACTAGGART, I M S, again becomes Officiating Inspector General of Jails, on the deputation of Colonel G Hall, F R C S, I M S, and Dr E J Simpson acts as Superintendent, Central Jail, Lucknow.

CAPTAIN W YOUNG I M S, Civil Surgeon, Gonda, holds visiting charge of Bahraich District

CAPTAIN H B MELVILLE, I M S, Deputy Sanitary Commissioner, N W P & Oudh, becomes Civil Surgeon of Naini Tal while Major J J Pratt, I M S, goes to Agra, and Lieutenant-Colonel John Anderson, I M S, to Lucknow, relieving Lieutenant-Colonel McConaghey, I M S, who goes to Bengal to act as Inspector General of Civil Hospitals

MAJOR W H E. WOODWRIGHT, I M S, F R C S I, goes from Bahraich to act as Civil Surgeon of Aligarh

LIEUTENANT W R BATTYE, I M S, has been granted eight months furlough under Staff Corps Rules

LIEUTENANT COLONEL W A QUAYLE, I M S, Civil Surgeon of Nagpur, C P, is granted compound leave for seven months

MAJOR M A T COLLIE, M B, I M S has been granted furlough for one year, and Captain F B Smith, I M S is appointed Superintendent of Matheran

LIEUTENANT COLONEL D P MACDONALD, I M S Medical Store-keeper to Government, Calcutta, has gone home on 1 month's leave Major W A Sykes I M S, M B, D S O, acts for him

SURGEON GENERAL D SINCLAIR C S I I M S, Madras is granted leave, and Colonel A M Branfoot, C I F, the P M O, Rangoon Command, officiates as Surgeon General with the Government of Madras

It is rumoured that Lieutenant Colonel J M Lorn, I M S, may retire from the service in October next.

ON the departure on furlough of Major Gibbons, I M S, Major C R M Green, I M S, F R C S, acts as Superintendent, Campbell Medical School, Calcutta

THE last batch of Lieutenants I M S, is distributed as follows—*To Bengal Command*—C W Melville, R McCarrison, James Mason, N S Wells, W M Anderson, F H B Stanley, *To Punjab Command*—W H Leonard, W D Pringle, A W Young, J G G Swan, R McL Dalziel *To Madras*—J I Pobb, A S Pozzak, R B B Foster, and none to Bombay

THE following Captains were promoted Majors, I M S, on 30th March—F R. Ozzard, A R S Anderson J T Calvert, I Jennings, A G Hendley (Bengal), W S P Ricketts, C V Morro, G W Jenney, C T Hudson (Bombay) There were none in Madras

HONORARY MAJOR CHARLES PIERCE and Honorary Captain John Reid, I S M D, are permitted to retire

A SCHEME has been sanctioned to provide for a larger reserve of Military Assistant-Surgeons over a line and a half have been provided in this year's Budget for this purpose

COLONEL J H HENDLEY, I O S, C I E., Inspector General of Civil Hospitals, Bengal is granted eight months leave out of India under Art 724, A R I, Vol I, Part I, with effect from 2nd April, and Lieutenant-Colonel J McConaghey, M D, I M S, acts as Inspector General, Civil Hospital, Bengal

LIEUTENANT COLONEL McCONAGHEY has been for a long time Civil Surgeon of Lucknow and Superintendent of the Lunatic Asylum there He entered the service in March 1872 and was put on the Brigade Surgeons list from April 1898 He is an M D R U I

CAPTAIN I N MACFOD, I M S is appointed an Agency Surgeon, 2nd Class (*sub pro tem*), from 21st May 1901

MAJOR J H TUI WALSH, I M S, goes home on leave, and Lieutenant-Colonel T Grainger, I M S, now at Durbhunga, goes to Murshidabad as Civil Surgeon

WE congratulate Major Ronald Ross on being elected a F R C S

LIEUTENANT COLONEL A J WILCOCKS, M D, I M S, Civil Surgeon, N W P & O, is permitted to retire from 1st April 1901 Lieutenant-Colonel Willocks is an M D of Aberdeen, and M R C S of England, 1873 He entered the service in 1873, and has been a Civil Surgeon in the N W P & O for many years past. He was an Honorary Surgeon to the Viceroy for many years past.

MAJOR E R W C CARROLL, I M S, Civil Surgeon, Goalpara Assam, is granted furlough for eighteen months on medical certificate

LIEUTENANT COLONEL J W T ANDERSON, I M S, F R C S, (Ed), to be Civil Surgeon, Ahmedabad, vice Lieutenant-Colonel M I Bartholomew, I M S, retiring

CAPTAIN A HOOTON, I M S, to be Assistant to Civil Surgeon, Poona, vice Captain J B Smith, M B, I M S

MAJOR J G VAUGHAN, I M S, goes to Mozufforpur as Civil Surgeon vice Major Green, I M S

LIEUTENANT COLONEL G S GRIFFITHS, I M S, of the 38th Bengal Infantry, is appointed P M O, Malakand Force, vice Lieutenant Colonel P deH Haig, I M S, retired

MAJOR G T MOULD, I M S, 1st Bengal Lancers, has been granted three months' leave (*m c*)

THE services of Captain T H SIMONS, I M S (Madras), are replaced at the disposal of the Military Department

WE regret to learn that Major F O Clarkson, I M S, Civil Surgeon of Arrah, has been laid up with a severe attack of iritis and corneal ulcer

THERAPEUTIC NOTES

WE have received specimens of **Tabloids of Ergotin**, brought out by Messrs Burroughs, Wellcome & Co The tabloids are sugar coated one grain each, and form an elegant and reliable method of administering ergot

IN the issue of *Commerce* for 20th March a long illustrated article is devoted to the virtues of **Petanelle**—which is now coming to be recognised as a cheap and very efficient surgical dressing Petanelle material is also used in numerous other ways, and the hygienic clothing and bedding made of it is rapidly becoming well known

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited Contributors of Original Articles will receive 25 Reprints gratis, if requested

Communications on Editorial Matters, Articles Letters and Books for Review should be addressed to THE EDITOR *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co Calcutta.

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Annual Subscriptions to the *Indian Medical Gazette* Rs 12 including postage

BOOKS, REPORTS, &c, RECEIVED

Archives of the Röntgen Rays
Manual of Surgical Treatment. Part IV By Watson Cheyne and Bourgard Longmans & Co
Treatment of Simple Fractures. By W H Bennett Longmans & Co
Essentials of Practical Bacteriology By H J Curtis, 1900 Longmans & Co
Disease of the Eye By Charles May Robman Co, Ltd.
Bell Taylor on Diseases of the Eye Hegan Paul French & Co
Commerce, No 403, Vol XVI

COMMUNICATIONS RECEIVED FROM —

Major H Herbert, I M S, Bombay, Major J H T Walsh, I M S, Berhampur Capt B H Deane, I M S, Midnapore, Dr G H Nuttall, O mbridge, Dr Max Simon, London Major R. Ross, Liverpool, Capt. V E H Lindsey, I M S, China, Capt T H Delaney I M S, China, Lieut Col D B Spencer, I M S, China Lieut Col J Maitland, I M S, Madras Capt C J Fearnside, I M S, Rajahmundry Lieut V H Roberts, I M S, China Dr E F Neve Kashmir, Major P W O Gorman I M S, Mian Mir, Major J T Calvert, I M S Chittagong, Major E H Brown, I M S, Calcutta, Major D M Moir, I M S, Calcutta, Major Andrew Buchanan, I M S, Nagpur, Dr P Manson, London, Dr Wanless, Miraj, Bombay Lieut C Murlion, I M S Capt Henry Smith, I M S, Jullundur

Original Articles.

ON CATARACT AND ITS EXTRACTION IN THE GOVERNMENT OPHTHALMIC HOSPITAL, MADRAS

BY T H POPE, M.D.,
LIEUT. COL., I.M.S.,
Ophthalmic Surgeon

DURING the earlier part of 1896, when on furlough in Heidelberg, I wrote a small treatise of thirty pages on cataract in the Madras Presidency, and added a tabular statement of 500 cases, shewing the nature of the cataract, the age, caste, and sex of each patient, and the result of operation, &c. I also gave therein the results of 2,000 cases operated on in the hospital. The "total" number operated on had been over 4,000, but as it took so much printing space and expense to have all the cases tabulated, I restricted the tabulation to only 500. The treatise was forwarded to the *Indian Medical Gazette*, after being published by the Oxford University Press, and it has been sold in all parts of India. I was engaged in writing a second edition, and adding to it my further experience from September 1896, when the Editor of the *Indian Medical Gazette* proposed to me that I should contribute a few remarks on the same subject to the special ophthalmic number. With so much material before me, it is very hard to condense it into small space, but I intend to be brief, and only touch on more essential points in connection with the practice of the Government Ophthalmic Hospital, Madras, supplemented with facts from my private experience.

I append to this paper yearly tabular statements of the number of operations performed each year, the different kinds of cataracts met with, together with other details. In calculating the percentage of success in these statements, the cases remaining under treatment at the beginning of a new year have to be deducted from the total of the previous year before making the calculation. The total, under the heading "cured," means cases, which on leaving the hospital had distinct vision tested by types and by the use of lenses (plus 10 D for distant vision, and plus 16 D for reading). The nomenclature adopted in the tables is that of the Royal College of Physicians of London.

The greatest care has been taken in the preparation of the tables to eliminate, to the utmost, statistical errors and exaggerations. The diagnosis of the nature of the cataract in each case is made at the time of operation, after the lens is extracted, and it is entered in the rough register. At the same time any peculiar-

ity at the time of operation is also immediately entered, such remarks being "iris cut," "vitreous escape," "removal by vectis or spoon," "iritic adhesions," and so forth.

Every case of operation is entered in the hospital case books, with a short history of the patient, the exact condition of the surrounding eye structures, and, whenever thought necessary, an examination of the urine for albumen and sugar. This is followed by the after-treatment for each day, or twice a week, and concluded by the state of vision on discharge from hospital. In the small treatise written in 1896, there are many particulars of interest in connection with the Government Ophthalmic Hospital, the patients that are treated in it, the routine treatment of cases, and other matters, which cannot be referred to now.

Speaking generally on the operation for **extraction of cataract**, I feel more and more convinced, how necessary it is that a surgeon should refrain from being in a hurry to publish his views in regard to what he thinks is the best method of operation, and as what strikes him as the cause of different complications, and concerning other details in the same connection. Many of the difficulties that one meets with in one's earlier operations of extraction entirely vanish later on, being due often to want of dexterity on the part of the operator and to his ignorance, which he may be slow to acknowledge. It is well to keep in mind the dictum of Professor Fuchs, of Vienna, himself one of the largest operators, and most experienced of ophthalmic surgeons,—"the greater the operator's skill grows with practice, the less frequently do unlucky accidents happen to him."

Statistics of operations for cataract in hospital practice are often misleading, and it is only when one has a very large number to do every year, that a fair estimate can be made of the real success obtained by an individual surgeon. It often happens that in the Madras hospital, one has a run of 300 successful cases, and when one considers the great variety of individual patients operated on, male and female, weak and strong, young and old, the success seems phenomenal, but immediately following this, four or five cases fail, either from suppuration or severe irido-cyclitis or some unknown cause, and so the average success at once falls. This cannot be helped in a large institution, where it is hardly possible to bestow as much careful attention to each case individually as one would wish to do.

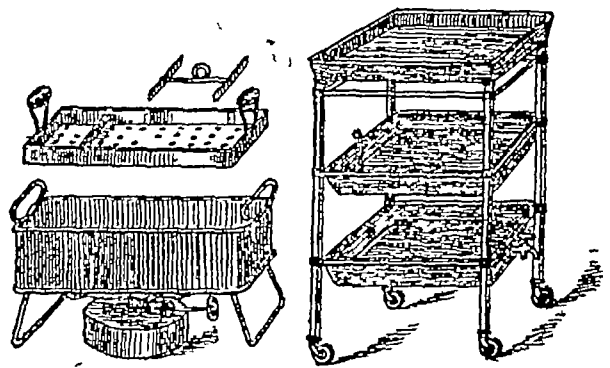
I may be allowed here to offer to my readers my present method in detail of the operation of extraction, which seems to me to give as satisfactory and good a result, as I am able to obtain. This is not exactly, in every detail, the same as is carried out in the Ophthalmic Hospital, but certainly with very little difference. It is natural that a case, when it is attended to from beginning to end by a surgeon, and when everything is done with his own hands and under his own eye, it is a truer statement of his practice, and more likely to be followed by a better result than the general run of his hospital cases. It is not my intention to advocate it as the best method, or to vaunt it as a superior method, but only as the one that has led me from my experience to follow in almost

all the cases that come under my treatment I must take for granted that the patient is one whose eye is affected solely with opacity of the lens, vision being merely perception of light, and there being no complications in connection with the surrounding structures of the orbit, or the deeper structures of the fundus, in fact, a "typical case of cataract." A few of the more common complications will be dealt with later on

(1) **Preparation of the eye and instruments**—A solution of the sulphate of atropine (4 grains to the ounce of distilled water) being prepared, two or three drops are instilled into the conjunctival sac, and a shade covering both eyes is tied on, and the patient is left alone till the next day. No bandage is applied to the eye. On the second day the eye is examined by focal illumination from lamp light in a dark room, and the dilatation of the pupil carefully noticed, and the relation of the iris to the underlying lens. These points being found normal, the eye is thoroughly irrigated morning and evening, and wiped out with absorbent boric cotton-wool soaked in a saturated solution of boracic acid in distilled water. A drop or two of the atropine solution is again instilled and the shade reapplied. No bandage is applied. If on the third day the eye and neighbouring structures appear bright and healthy looking the operation can be performed, but if not, the same irrigation and cleansing can be repeated for another day or two. On the day of operation the eye is cleansed again and syringed out with a solution of glycerine in distilled water (5 per cent), and the brows and lashes and surrounding skin well-rubbed with boric wool soaked in the saturated boracic lotion. The patient's head is covered with a clean towel placed over the forehead, and tucked round the ears and under the occiput.

All the instruments except the knife (which is a pattern of mine, *vide figure*) and Bowman's stop-needle are placed in an enamel ware sterilizer (vide figure) containing carbolic acid lotion 1 in 100 and boiled

and one or two cutting instruments, which are steeped in absolute alcohol before use



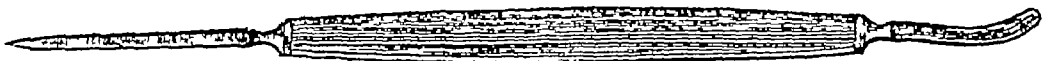
Enamel ware Sterilizer, with Lamp and Tray

Glass Aseptic Table

The surface of the eyeball is now anaesthetised by three instillations of a few drops of the solution of cocaine hydrochloride in distilled water, 4 or 6 per cent in strength, at intervals of three to five minutes. Every thing is now ready for the operation.

(2) **The operation**—The lids are opened and fixed with Weiss' speculum, and the surface of the eyeball for the last time syringed over with carbolic lotion (1 in 100) in a glass syringe. The conjunctiva is now caught up with forceps just below the cornea in a vertical diameter, and Bowman's needle is thrust into the anterior chamber, and the anterior capsule very gently torn open. The needle is entered not at the sclero-corneal margin, but a shade externally (*i.e.*, more in the sclerotic itself) and guided carefully over the iris. This point is chosen, because it is found that it prevents any escape of the aqueous humor, which so often occurs, when the needle is entered at the corneal margin or a little inwards.

The operation I always adopt now is extraction without iridectomy, and the cut is 4 mm below or 2 mm above the horizontal diameter, including a conjunctival flap in its completion. In order to explain this more clearly, I may refer to an idea taken from Keen and White's Surgery, Vol II, page 1044.—If the cornea is compared to the

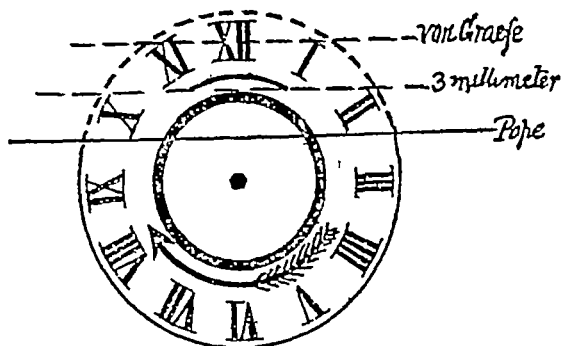


Cataract Knife, linear, combined with shell spoon, in ivory handle (made by Weiss & Son, Oxford St., London)

The solution is allowed to cool, and the tray lifted out and the instruments slipped into the glass tray of a glass aseptic table (*vide figure*). This glass tray has been washed well in a solution of carbolic acid, and holds a quantity of the same solution. On the tray fits a clean aseptic glass slab, not seen in the drawing, supported on metal feet, on which are placed the knife, needle,

dial of a Watch, Von Graefe's cut extended from I to XI o'clock, the puncture and counter-puncture being 1 and $\frac{1}{2}$ mm behind the transparent cornea. In the 3 mm cut the puncture and counter-puncture would be from midway between I and II o'clock to midway between X and XI o'clock, whilst in the method I now adopt, without iridectomy, the puncture and counter-

puncture are from between II and III o'clock to between IX and X o'clock. The cut involves a little more than one-third of the total corneal circumference, corresponding to the dotted line in the accompanying drawing



The cut is completed as well as possible in the sclero-corneal margin, and as good a flap is taken from the conjunctiva above as it is possible to obtain. The incision having been completed, a little manipulation is required to express the lens, and this is very easily accomplished in the following manner. The conjunctival flap is folded downwards, and the sclerotic at the upper border of the incision, just above the figure XII in the clock, is depressed with either the index finger, or the closed end of the fixation forceps, which have been released from the grip of the conjunctiva below, at the same time the cornea is gently pressed on and stroked over along one-fourth of its margin at its lower border, in the direction of the arrow in the figure of the clock. This is effected with the point of the shell spoon attached to the cataract knife, and the pressure is directed towards the centre of the eyeball. The lens is at once started from its bed, and gently removed. When this is accomplished skilfully, stroke by stroke the whole lens is removed, and a beautifully black pupil at once shews itself. In this method of removing the lens I have never seen any bad result from bruising the iris, and indeed I have not been able to bring myself to believe in this "bruising of the iris" as written of by some surgeons, and as to the fear of "stretching the iris," this is of no consequence whatever. I have repeatedly shewn to many surgeons, who have at different times witnessed my operations, to what a large extent the iris can be stretched in removing the lens. To speak of either of these as "dangers" to the iris is not, in my opinion, worthy of any consideration. After trying Von Graefe's cut, which I used to invariably adopt until 1896, and then proceeding to the still larger 3 mm cut for some months, I now find the still larger before-mentioned cut to be the most satisfactory. A conjunctival flap is always added and the iris is left intact. The two great advantages I find are that prolapse of the iris is almost a thing of the past, and that the lens cortex is much more easily removed clean from the eye. The conjunctival flap when replaced

and smoothed over, adheres well and firmly in 24 hours after the operation, and if the iris has had a tendency to prolapse upwards at the operation, it is gently put in position, and is well kept back by the sealed conjunctiva. In my experience the conjunctival flap has been nothing but a success, and, moreover, I have been able to show to so many of my professional brethren, who have been so kind as to wish to witness my practice in the hospital, how perfect the adaptation of the parts is after this method of operation. The cicatrix in the sclero-corneal margin is quite hidden beneath the conjunctiva, the pupil is central and clear, and the eye looks as if it had never been touched. The great objection to, or rather the anticipated dread of this large incision, involving a shade more than one-third of the entire corneal circumference was that of suppuration, but with rigorous antiseptic and aseptic precautions I think this may safely be ignored.

(3) **After Treatment**—After the expression of the lens the conjunctival flap is smoothed down, the surface is cleaned, with boric wool, of the small quantity of blood that has issued from the flap, a few drops of the glycerine lotion are dropped into the conjunctival sac, and finely pulverized iodoform is sprinkled over the surface of the eyeball. The speculum is now removed. An oval antiseptic eyepad, as used by Professor Horner of Zurich, and consisting of a thin layer of antiseptic cotton-wool, lying between two thinner layers of muslin, is smeared over with white vaseline and dusted over with iodoform, and placed over the closed lids. A pledget of absorbent cotton-wool is now placed over each eye and firmly bandaged round the temples, and tied on one side of the head behind the ear. The bandage is a red cross roller bandage of thin muslin material, with a small triangular piece cut out to fit over the bridge of the nose. In hospital I use the 6-tail bandage as described in my pamphlet of 1896. The greatest care must be taken to apply the bandage evenly and firmly, but not too tightly, because I am sure that uneven pressure often produces a tendency to cause a prolapse of the iris. Next morning the dressings are removed and the eye kept open for an hour or two, and in the majority of cases all that is required is the instillation of a few drops of the 4% solution of cocaine, after the lids have been gently wiped with a piece of soft cotton-wool. When the eye looks well after operation, I never apply any liquid in the shape of any lotions to its surface. After three or four days the eye is only protected by the double eyeshade, and the bandage done away with. I find that in most of the surgical injuries of the eye, the less one has to do with bandaging the organ, the better. The protection of the double eyeshade and the admission of fresh air, with shaded light, is a great step in the hygienic treatment of the eye.

(4) **After Complications**—Those usually met with are—

(a) *Conjunctivitis, with œdema, either catarrhal or purulent*—This is treated by keeping the eye open for three or four hours each morning, instilling the cocaine solution, syringing gently with the saturated boric lotion, after which the lower palpebral conjunctiva is brushed over with a solution of nitrate of silver, 3 grs to the ounce of distilled water. Nitrate of silver is the antiseptic of the eye far excelling all the disinfectants proper, and being the most effective agent for removing all purulent micro-organisms.

(b) *Suppurative keratitis beginning at the cut surface of the cornea*—This is treated in the same way as (a), but the solution of atropine is instilled morning and evening (to keep the iris well dilated) before the other remedies in (a) are applied. If the purulent condition is arrested, but iritis and cyclitis occur I advocate enucleation of the eyeball, as it leads to atrophy of the eyeball, and sympathetic ophthalmia and destruction of the other eye. This is a complication to be very carefully attended to.

(c) *Iritis*—If the inflammation is moderate this is treated with the instillation of the cocaine and atropine solutions twice daily, and the bandage applied, until the inflammation subsides.

(d) *Iritis followed by suppuration and panophthalmitis*—Both these are hopeless, and lead to destruction of vision, in the former case, and phthisis of the eyeball in the latter. In panophthalmitis, I often make a crucial incision deep into the suppurating eyeball to relieve subsequent severe pain and misery, but I never enucleate.

Conditions forbidding immediate operation.—The most usual are (1) Chronic conjunctival catarrh, or chronic ophthalmia. This is one of the most frequent diseases affecting persons somewhat advanced in age. In old people it is almost the rule to find this form of disease, which is often called senile catarrh. The changes in the conjunctiva are on the whole but slightly pronounced, and so often overlooked, but they often lead to an acute exacerbation followed by suppuration and failure of the operation. This I have noticed to be especially the case in the moist weather of the rainy months of the year (June, July and August) in Madras. During these months we have moisture and heat, a condition well known to favour purulent conjunctivitis. It is necessary to know the characteristic symptoms of this disease, and to distinguish them at once, failure of which too often leads to disappointment. It is generally successfully treated by the application of the solution of nitrate of silver by a brush (strength 2 or 3 grs of the nitrate to the ounce of distilled water) for two or three days once daily, and then the instillation of a few drops of a solution of zinc sulphate (3 grs to the ounce) twice daily for another two or three days.

(2) *Granular conjunctivitis, acute or chronic*—This is easily discovered, when the upper lid is everted during the primary examination of the eye. I have not found this a serious source of consideration, and it is usually treated for about ten days or so before operation is performed. After having tried many and various methods of treatment, I find nothing so satisfactory as the brushing of the upper lids daily with a solution of

the nitrate of silver, varying from 5 to 20 grs to the ounce of distilled water, according as the case is mildly or severely acute and purulent. In about ten days the purulent condition is checked, the lids no longer stick in the mornings and the eye assumes a bright and clear appearance, as it always does when silver nitrate is applied to it for a few days, and then the operation can be performed with almost a certainty of an excellent result. The best preparation (that I know) of the eye for the operation of removal of cataract is to brush it out for three or four days twice daily with a weak solution of the silver nitrate.

3 *Fistula lachrymalis in one of its various stages*—This is a formidable complication and is usually treated by slitting up the lower canaliculus and passing the probe, after which the passage is well washed out with the saturated boric lotion, or any such antiseptic,—in addition the lower lid is daily brushed with the nitrate of silver solution, till it appears healthy. This is continued for some days, and at the time of operation the inner angle of the eye is well dusted over with finely ground iodoform powder, which is guided as well as possible into the opened duct with a probe. When this condition is well advanced, and a sinus has formed opening on the surface, leading to carious bone, it is in my opinion incurable.

General Remarks—I shall begin these by a quotation from Mr N C Macnamara, Surgeon to the Royal Westminster Ophthalmic Hospital, a Surgeon Major, retired, of the Indian Medical Service (*vide Diseases of the Eye and Refraction by Macnamara and Hartridge, fifth edition*). On page 339 we read—“There can, however, be no doubt that the most successful results will be obtained by the surgeon who, at the time of the operation can best adapt his proceedings to the circumstances of the case before him.” In writing of Von Graefe's operation he adds “This operation includes an iridectomy, in order to facilitate the passage of the lens from the eye outwards, it enables us to clear out any cortical matter left in the eye after the delivery of the lens, and subsequently to obviate the danger of prolapse of the iris through the wound. Further on he adds (talking of younger persons and vigorous old people) “if the pupil attains its maximal dilatation under the influence of cocaine or of atropine, we can remove the lens with safety, provided we have made a sufficiently large opening in the corneo scleral margin to permit of the easy egress of the lens from the eye. We must, in fact, have a dilated pupil and a sufficiently large opening, through which the lens is to pass, if the iris is not to be injured in its passage outwards, or to leave cortical matter behind it adhering to the iris. If the pupil has fully dilated before the operation, and the section has been made sufficiently large a cataract, as a rule, may be completely removed without an iridectomy, and without leaving either cortical matter, or capsular epithelial cells adhering to the iris. Under antiseptic precautions, so far as our experience goes, sloughing of the cornea does not occur in consequence of a large incision being made at its corneo scleral margin, the wound healing just as well, and as quickly as if a small incision had been made. However much the iris has opened the pupil, the moment the lens has been removed, it contracts to a greater or less extent. A solution of eserine should be dropped into the eye immediately after the operation.”

These remarks, coming from the pen of an officer, whose experience is unrivalled, and whose knowledge of the science and practice of Ophthalmology is second to none, must carry the greatest weight. For my part I must heartily endorse every word he has written, and those who have read and studied his excellent volume

must feel that, however much the literature of the subject has been enriched by the works of surgeons from Europe and America, a store of knowledge incomparable in its usefulness has been laid by in Macnamara's book. In reference to the practice of adding an iridectomy to the operation of extraction, there is no doubt that it facilitates the passage of the lens and the removal of cortical matter, in fact, it makes the operation easier. It certainly also obviates the danger of prolapse, but in 1897, in 130 consecutive cases of extraction, in which I purposely performed an iridectomy as a trial, I found that in 11.8 per cent, even with the utmost care, the prolapsed edges of the cut iris were entangled in the lips of the incision and produced an irregular and ugly coloboma. I would say then that, for beginners, those who have not regular operative work on cataract, and those who have not acquired the necessary confidence in their skill, iridectomy is a useful and needful help. I would go farther and say that I would judge of the dexterity of an operator on this particular form of eye-disease by the number of iridectomies he has to perform, unless, indeed, he performed the iridectomy as a regular routine practice. But for fear of hateful egotism, I might insert here the very insignificant average number of iridectomies I have performed in the enormous numbers of extractions that it has been my good fortune to have gleaned my experience from, but being unable from want of leisure and of space to publish all my operations in detail, as I did in my pamphlet of 1896, I refrain from doing so.

Extraction of the Lens in its Capsule—

This is a method that I never now attempt. I have tried often and in many cases succeeded, but just as often I have failed to express the lens. Macnamara's operator, Bridgins Teale's suction and lastly Captain Smith's method (Civil Surgeon, Jullundur) as described in the *Indian Medical Gazette* of July 1900, have all been given a good trial but the only conclusion I have arrived at, is that there must be something different in the size, formation and firmness of structure of the eyes of the natives of the North of India as compared with those of the South, because I find an insuperable difficulty in making the lens start from its position, and with a little extra pressure there comes an escape of vitreous, a complication that I look on as almost equivalent to failure. Unless there is some such reason for my failure I must rest content to be one of Captain Smith's "incompetent operators." I note in Macnamara's work, page 342, that in speaking of Mr Cayley's success in this method of operation, his average success was 87%, but it would be well to know in how many of these cases there was an escape of vitreous, and to remember that an average success of 90% in any other method is still better. In the very very few cases in which there has been just an attempt, as it were, for the vitreous to escape and where the vitreous has presented in the section and has gone back the result of the operation has not been affected, but when the vitreous has escaped in any appreciable quantity, the vision left in the eye is not to be considered satisfactory. It may happen that for two weeks or even more, the result appears to be good but in such cases, the pupil, being beautifully black, assumes an elliptical shape, with the long diameter in the transverse axis of

the eye. By degrees the pupil becomes smaller and smaller, the lower border of the pupil rises higher and higher, the upper part of the iris disappears above the section, and the lower travels upwards and expands, until the pupil eventually disappears. In fact the whole process is like the waning moon. The area of the pupil is gradually diminished by the iris slowly creeping upwards until it shuts it off. The explanation of this phenomenon, I am at a loss to explain, and I have no wish to theorize. In former years I used to consider that the escape of a moderate amount of vitreous was of no consequence, and in some cases this idea has held good, but I have so often seen the return of patients for the removal of a cataract in the second eye, in whose operated eye there has been an escape of vitreous with the condition above described that I have anything but a favourable opinion of the value of the vision in an eye, in which the extraction of the cataract has been attended with a marked loss of vitreous. My opinion is and it may be taken for what it is worth, that the dexterity of an operator may be judged by the number of times he has found it necessary to do an iridectomy during extraction, and his real success by the number of times he has finished his extraction without the loss of any vitreous.

Secondary Glaucoma after extraction

—I desire to make a few remarks concerning this very serious condition that I have met with but not often. I have seen it follow extraction which has been performed with and without iridectomy and also in cases of prolapse of the iris after extraction, when the prolapse has been difficult to deal with. In cases of simple extraction, *i.e.*, without iridectomy, it occurs *firstly*, when the posterior capsule of the lens has become adherent to the entire pupillary margin of the iris, and there is therefore the condition of "seclusio pupillæ." The aqueous accumulates in the posterior chamber, protrusion of the iris follows, and is accompanied by increase of tension. The adhesion of the iris here is caused by a subacute iritis, which is too often overlooked and indeed hard to observe unless by close and careful examination. *Secondly*, it may occur when there is severe iritis after extraction and the pupil becomes occluded and the iris adheres entirely also to the posterior capsule. There is invariably also a degree of accompanying cyclitis and increase of tension. The pain is marked also, and the inflammatory condition takes a long time to subside even after vigorous treatment. When an iridectomy has been performed at the time of the extraction, or a prolapse has occurred and been excised, secondary glaucoma, when it occurs, is due to the incarceration of the iris in the cicatrix of the cornea and sclera and also to the local adhesion of the iris to the posterior surface of the cornea. The cicatrix that is formed in these cases is less firm and is generally cystoid, often becoming ectatic. One of the premonitory symptoms of the glaucomatous condition here is a dimness of the situation of the iris, slight turbidity of the aqueous and a streak of deposit at the bottom of the anterior chamber, forming a hypopyon, which is free from micro-

organisms There is evidently "cyclitis" and not so much "iritis"

Treatment—With regard to the treatment of these various conditions, occlusion of the pupil following iritis or irido-cyclitis must be treated by the operation of iridectomy, after the inflammation has been vigorously combated by antiphlogistics, and has entirely subsided. This generally takes seven or eight weeks. The prognosis is bad, and the operation too often a miserable failure. In incarceration of the iris, from whichever cause above-mentioned, I administer chloroform, and perform an iridectomy (often the second iridectomy in the same eye, the first being previously performed at the operation of extraction) well to the margin, in a *downward* and *inward* direction. The operation is more easily accomplished than one would imagine, the tension being increased, as soon as the keratome is withdrawn from the anterior chamber, the aqueous gushes out and causes the iris to prolapse. The prolapsed portion is therefore seized and excised, and the cut edges carefully replaced, eserine solution is instilled, and a firm bandage applied. One of the commonest, though very serious, mistakes is to imagine that the turbidity of the aqueous and "hypopion streak" is due to iritis and therefore requires the use of atropine. I have known this to happen, and cases have been sent to me in this condition with the glaucomatous tension greatly aggravated, the cornea steamy, pericorneal injection very marked, hypopion increased, and the case almost beyond recovery, on account of the mistaken diagnosis, and the free use of atropine. Enucleation has even been

suggested to me, but a well-executed iridectomy at the onset is a perfect marvel of success, and has in my experience saved the eye and restored to it first-class vision. Such a case as this occurred in a patient, whose cataract had been removed by my predecessor in 1891, and whose prolapsed iris had been excised, and become incarcerated. The eye did well till October 1892, when the patient was sent to me over 200 miles by train. On arrival I found all the symptoms, as above described, and was told that atropine had been used every two hours the day previous. No time was lost in administering chloroform and performing iridectomy downwards and inwards. The very next day the change was most gratifying, the vision which had become reduced to almost "nil" was restored, and he is still able to see and read well.

In conclusion, I must apologize for the length of this paper, and crave the utmost pardon of my brother officers of the Indian Medical Service for its egotism, but we are all fellow-workers for the honour of our profession, and of our good old Service, and although I am old enough to know that there is nothing really new (or a precious little) in anything under the sun, and a "little less perhaps" in my knowledge of the Science and Practice of Ophthalmology, still there is a "golden harvest" in a little "truth and fact." Moreover, when it is remembered, that so many years have been spent, and even now the greater part of one's duties consists in teaching students, and laying down the law, I trust that much leniency will be granted me for anything that may seem "Dogma" *papal* or otherwise.

Cases of Cataract operated on in 1896 and 1897

EXTRACTION OF LENS	1896					1897				
	Remained from 1895	Operated on	Total	Cured	Percentage of success	Remained from 1896	Operated on	Total	Cured	Percentage of success
177 Lenticular cataract										
1 a ₁ Congenital, complete		1	1		Nil		2	2	2	100.00
b ₂ Anterior polar							1	1	1	100.00
4 & 5 Cortico-nuclear	7	469	476	414	89.03	11	544	555	501	91.26
6 Complete—										
(a) Senile	11	519	530	480	92.48	11	558	569	507	91.51
(b) Juvenile or soft	1	15	16	13	81.25		15	15	11	84.62
7 Traumatic		10	10	7	70.00		26	26	16	64.00
9 Shrunken		1	1		Nil					
2 Secondary cataract		14	14	4	28.57		10	10	4	40.00
178 Capsular cataract		4	4	2	50.00					
Total	19	1,033	1,052	920		22	1,156	1,178	1,042	

Cases of Cataract operated on in 1898 and 1899

EXTRACTION OF LENS	1898					1899				
	Remained from 1897	Operated on	Total	Cured	Percentage of success	Remained from 1898	Operated on	Total	Cured	Percentage of success
177 Lenticular cataract										
<i>b</i> ₁ Posterior polar	..					.	1	1	1	100
4 & 5 Cortico-nuclear	6	410	416	378	93 33	11	496	507	444	90 43
6. Complete—										
(a) Senile	15	495	510	469	92 69	4	485	489	442	92 47
(b) Juvenile or soft	2	12	14	12	92 31	1	25	26	25	96 15
7 Traumatic	1	14	15	11	73 33		5	5	5	100
9 Shrunkon										
2. Secondary cataract		4	4	1	25 00					
178 Capsular cataract		2	2	1	50 00		2	2	1	50
Total	24	937	961	872		16	1,014	1,030	918	

Cases of Cataract operated on in 1900

EXTRACTION OF LENS	Remained from 1899	Operated on	Total	Cured	Percentage of success	Remaining under treatment on 31st Dec 1900
177 Lenticular cataract						
<i>a</i> ₁ Lamellar		1	1	1	100	
<i>b</i> ₁ Posterior polar		2	2	2	100	
4 & 5 Cortico-nuclear	16	513	529	484	91 84	2
6 Complete—						
(a) Senile						
(b) Juvenile	11	592	603	547	91 32	4
7 Traumatic		24	24	21	87 50	
178 Capsular		13	13	9	69 23	
Total	27	1,151	1,178	1,068		

A NOTE ON CATARACT OPERATIONS AND AFTER-TREATMENT

BY J LEWTAS, M D (LOND),

LIEUT COL, I.M.S.,

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My contribution to the Special Ophthalmic Number of the *Indian Medical Gazette* must be confined to the consideration of a few practical points connected with **Cataract operations and after treatment**

The operation practised at the Calcutta Eye Infirmary is the one now almost universally

adopted, *viz*, that by means of a corneal flap, the size of which is regulated by the anticipated size and hardness of the cataract. The addition of a conjunctival flap has been abandoned, because while necessarily causing a slight hæmorrhage, and sometimes, so it has seemed, a feeling of discomfort beneath the upper lid, it does not appear to offer any compensating advantages.

The old controversy between simple extraction and extraction with iridectomy might well be relegated to the history of surgery. It is as meaningless as would be for instance a classification of operations for liver abscess into

those with resection of a rib and those without. If an iridectomy is necessary let it be done, but not otherwise. I find that in 147 extractions during the past three months I have done an iridectomy in 33. If the iris interferes with either the removal of the lens or the subsequent clearing of the pupil from cortical substance which may have become detached, then an iridectomy is useful or even necessary. This wording of the rule is preferable to the statement that an iridectomy is advisable if the iris has not dilated with atropine, because notwithstanding this condition the lens is often extruded without any difficulty. It is commonly stated that iridectomy should precede any attempt to remove a dislocated lens, but here again nothing is lost by first ascertaining by trial whether the iris presents any obstacle to the escape of the lens. Here in India we have occasion to remove lenses which have been couched, and in my experience an iridectomy is seldom if ever necessary.

It is assumed that the operation has been done with the usual aseptic precautions, such as washing the skin around the eye, and swabbing the conjunctival sac with sterilised normal saline solution, &c. When boiling the instruments no exception is made of the knife which is stopped just before immersion and between each operation. All dressings and solutions are boiled afresh on each operation day. If after removal of the lens any cortical substance remains in the area of the pupil this is removed by means of two curettes, one of which by pressing on the front of the cornea pushes the fragments upwards towards the incision which is held open by the other curette. If notwithstanding this manipulation some cortex still fails to be expelled, there need be no hesitation about withdrawing it by introducing either a curette or an iris forceps into the anterior chamber. Pressure communicated through the lower lid besides being likely to infect the wound is not suited to the deep sunken eyes with which in India we have frequently to deal. After completion of the operation a pad of sterilised gauze moistened with either boracic or 1 in 4,000 perchloride lotion is applied to both eyes, and these pads are changed in the evening of the day of operation. After giving a prolonged trial to various methods of after-treatment, I have adopted what may be called the **moist aseptic pad**. For the first three or four days after the operation the pad of moistened aseptic gauze is changed morning and evening, the edges of the lids being washed with a pledget of absorbent wool which has been dipped in sterilised boracic lotion. This is found to prevent itching of the eye and irritability of the patient, and although it may be impossible to produce an aseptic condition of the conjunctiva, this method at any rate ensures a flushing of the conjunctival sac, partly with the lachrymal

secretion, and partly with a non-irritating aseptic solution. It seems to me that the practice of sealing up the eye for several days after the operation is conducive to the cultivation of septic organisms in the conjunctival sac, especially in the case of the poorer classes of the people of India whose palpebral conjunctiva is so seldom healthy. As the House-Surgeon of the Calcutta Eye Infirmary has held office for nearly two years, he has had a large experience of both methods of after-treatment, and I have, therefore, asked him to state briefly the results of his experience. He writes as follows—"The introduction of the moist aseptic dressing has been a great comfort to our patients. With the dry method of dressing it was necessary in 60 to 70 per cent of our patients to give either morphia or bromide for several days after operation to keep them quiet, but since introducing the moist aseptic dressing we have practically dispensed with the use of bromides and morphia as pain is almost unknown. The smearing and itching of the lids which were almost invariably complained of by patients dressed with dry pads of absorbent or sal-alembroth wool are seldom complained of now, and that only if the dressing happens to become dry." This frequent changing of the dressings has other secondary advantages. For instance, it keeps the surgeon informed of the state of the eye, and by satisfying the curiosity of the patient prevents him from disturbing the dressings. As regards results the same House-Surgeon writes as follows—"With the dry pad the failures, owing as a rule to the patient's disturbing the dressing, were about 5 or 6 per cent even when the greatest care was taken in the selection of cases, whereas since the adoption of the moist method we have lost only one eye out of nearly 150 cases." As a rule both eyes are bandaged for the first three days, but occasionally it happens that a patient is so intolerant of this, that an exception must be made. About the sixth day usually the bandage of the eye operated upon is replaced by a shade.

Secondary cataract is not in my experience of more frequent occurrence when iridectomy has not been performed, probably because one does not hesitate to prolong the operation until every visible vestige of lens substance or capsule has been removed. When it does occur, a small opening is made with a keratome in the original operation wound and the so called secondary cataract is withdrawn by means of an iris forceps. Needling is very seldom practised.

Immature cataracts are removed when for various reasons patients are unable to wait for maturation, and the results are very satisfactory, especially as regards the absence of residual capsule or secondary cataract. These immature

cataracts often are at once so cohesive and elastic that they can be extracted through a smaller incision than is required for a mature hard cataract, and that without any crumbling or detachment of cortex, and the lens is generally removed with its capsule. In the past month six immature cataracts have been removed at this hospital, and in no instance was there any escape or even bulging of vitreous, while in only one of these was iridectomy performed, and that a month previously, in the unrealised hope of hastening maturation.

CATARACT EXTRACTION* AT THE C J OPHTHALMIC HOSPITAL, BOMBAY

By H HERBERT, F.R.C.S.,

MAJOR, I.M.S.,

Ophthalmic Surgeon

Infection of the Eye—The recent history† of this institution is highly instructive in the prevention of infection of the eye in operations, by the use of perchloride lotion. From June 1st, 1895, when I took over charge, to April 12th, 1896, I performed 265 extractions, using 1 in 5,000 perchloride for washing out the conjunctiva, but in no systematic manner. There were two suppurations of the eyeball, and six cases of severe *iritis* or *irido-cyclitis*. In the periods from April 16th, 1896, to August 5th, 1897, and from November 7th, 1897, to August 12th, 1898, 497 lenses were extracted with the help of strong perchloride, at first 1 in 2,500, later 1 in 3,000. After washing the skin of the lids and neighbourhood, the lotion was dropped freely into the conjunctival sac from bits of lint dipped in lotion, squeezed out usually twelve or thirteen times, the eyelids being held everted and moved about a little. After ten minutes, occupied by cocaine instillation, there was found in fairly normal conjunctivas an accumulation of mucus, which was detached by free movement of the lids‡ on one another and washed away with boiled saline solution, doubtless carrying away micro-organisms with it. In conjunctivas altered by chronic inflammation this mucus was generally very scanty or completely absent, into them the lotion was again dropped two or three times. During operation the cornea was kept moist with the saline solution. And afterwards a curette was passed § over the whole of the pal-

pebral conjunctiva to again remove any mucus that might have collected. The outer lashes of the upper lid were snipped off after the insertion of the speculum, if they were at all likely to touch the knife in making the incision. These various measures proved eminently satisfactory in the exclusion of all the graver forms of infection. In the whole series there was no suppuration and no *iritis* severe enough to resist energetic treatment with atropin. But the inflammatory reaction to the lotion in normal delicate conjunctivas was often excessive, and not confined entirely to the surface. A very free use of atropin on the following day sometimes failed to prevent posterior synechiae forming and, taking the whole series, the number of synechiae resulting was undoubtedly considerably greater than in the successful cases of the days of weak lotion. Still the effect on vision of these synechiae, and of the few shreds of lymph connected with them, was only slight in the worst cases, and, when weighed against the total absence of grave infection, leaves the balance heavily in favour of the stronger irritating antiseptic.

Returning from leave on November 11th, 1899, I continued for a time a practice which had been instituted during my absence, of reducing the application of strong lotion by half (lint squeezed out six times) in most cases, and of reducing also the strength of the sublimate to 1 in 5,000 in apparently normal membranes. The result was that in 84 extractions I had one total suppuration and one very severe *irido-cyclitis*, leading to softening of eyeball. So on December 28th, 1899, I returned to the exclusive use of strong lotion (1 in 3,000) though still varying the quantity used with the condition of the conjunctiva. Six or eight applications as above were made in quite normal cases, in which the absence of discharge had been tested by a bandage, the aim was to produce only a scanty secretion of mucus. Cases of conjunctivitis were treated until there was no discharge, and then operated on with the use of the full amount of lotion. The results have not been quite so good as in former days, when the antiseptic was used rather more freely. There has been rarely any trouble from the effects of the lotion, *i.e.*, the pupils have as a rule dilated easily and clearly, but there have been a few grave infections. Among 578* extractions there were five very severe inflammations. Two of them were, however, late inflammations and could not be ascribed to infection introduced at the time of operation. They will be dealt with first—

In the first case everything went on well for six days, the pupil dilated easily, and the injection of the eye was lessening. Then pain began, and on the following day, when shown to me, the wound was open and there was suppurative *irido-cyclitis*, which went on to *phosphthalmitis*. About this time a few cases of acute

* Linear extractions are not included in the figures given in this paper.

† I give my own experience mainly as fuller notes are obtainable of these cases, and it is as well to have the personal element the same throughout.

‡ At the same time the opportunity was taken to squeeze out any excessive Meibomian secretion, by pressing the conjunctival surfaces of the lids together.

§ As this is rather unpleasant and apt to cause spasm of the orbicularies, the lower lid is pulled away from the eyeball during the proceeding, spasm of the upper lid does no harm.

* Statistics taken to end of January of present year in order to include an infection which occurred in that month.

conjunctivitis had developed in patients ten days or so after cataract extraction, the same thing had occurred here before the wound was firmly united and infection entered the eye. The patient, being considered by the Hospital Assistant out of danger, had been transferred to the care of a ward boy who also had charge of patients admitted with conjunctivitis for final treatment before cataract extraction. The admission of such patients was discontinued. Very possibly this case of infection might not have happened, if I had been able to give as much personal attention to patients as formerly, but it was a very busy year (1900), and many of the patients were not seen by me after operation until ready for discharge.

The second patient, a woman of 55-60 years, was pale and feeble on admission, but there was no oedema anywhere noticeable. The case went on perfectly for eight days. Then fever came on, the temperature rising to 103.4°, with diarrhoea and vomiting, oedema of feet and elsewhere, urine sp. gr. 1012, with considerable albumen. Within twenty-four hours the anterior chamber became largely occupied by greyish lymph, which completely obscured the pupil. There was no pain, and only very faint injection of the eye near the wound. Pressure on the cornea showed movement between the lips of the corneo-scleral incision, the conjunctival flap only had firmly united. The patient was taken away two days later with the eye in the same condition, and two days later still she died. I think this woman was perfectly fit for operation. We do not consider chronic Bright's disease without oedema to contra-indicate operation, and we never examine the urine for either albumen or sugar without special indications. The eye would have done well had it not been for the acute renal attack, which could not very well have been forecasted.

The three remaining cases were primary infections,* very severe uido-cyclitis, ending in two, or possibly in all three cases, in softening and shrinking of the eyeball. In two of them there was escape of vitreous at the operation. Since loss of vitreous is at this hospital a comparatively rare accident, and infective uido-cyclitis even more rare, it is a fair assumption that their coincidence in these cases was not purely accidental. In other words, it is probable that conjunctivas, which may have been sufficiently treated with lotion, &c., to ensure a safe recovery from an ordinary uncomplicated operation, were yet able to infect eyes with open wounds occupied by vitreous. Conjunctival bacteria had been neither entirely removed nor completely killed by the antiseptic treatment adopted, but possibly the infective agent was in some degree attenuated, since none of the three cases went on to panophthalmitis.

My results sum up thus —

(1) With 1 in 3,000 sublimate lotion freely used there was a series of 497 operations completely exempt from grave infection.

(2) With the same fluid rather less freely applied, in 578 extractions there were (besides

two late inflammations, with no bearing on the question at issue) three very severe primary infections, which did not go on to panophthalmitis.

(3) Where not only the quantity, but in most instances the strength also, of antiseptic was less, panophthalmitis followed thrice in 349* operations, together with seven† cases of uitis or uido-cyclitis.

From the records of operations performed by others of late years at this hospital it is impossible to make out exactly what degree and amount of uitis there was, suppurations only can be definitely given. Fifty-six extractions only were done with strong lotion freely applied, with no suppuration, 438 extractions with reduced average strength and quantity of lotion gave three suppurations.

Irrigation of the Anterior Chamber with sterile-normal saline is practised in most of our operations. It enables us to make use of a conjunctival flap without inconvenience, any blood‡ being at once washed away, and it provides the readiest and most effective means of removing cortex, if used alternately with light jerky intermittent pressure applied with a cataract spoon about the corneal margin. In addition, the corneal surface is kept moist with the solution throughout the operation. I cannot understand why such a useful measure should be so seldom employed. The ordinary laboratory wash-bottle insures asepsis, the fluid is boiled in the flask shortly before use, the tubes have strong perchloride passed slowly through them, and the silver nozzle is thoroughly heated in a flame, and its point afterwards not allowed to touch anything but the eye operated on.

ESERINE AND ATROPIN DROPS

A. Before operation—At one time, when performing almost exclusively the combined operation (with iridectomy), I used eserine shortly before operation, hoping to get the effect immediately after operation, and not to be troubled with it during operation. But the action comes on too gradually to admit of such

* 265 operations from June 1st, 1895 to April 12th, 1896, and 84 operations from November 12th to December 27th, 1899.

† More or less useful vision was given in four of these seven cases by subsequent operation for closed pupil, therefore these four infections were much milder than the three of group (2). The complete absence in groups (1) and (2) of closed pupils due to this comparatively mild class of inflammation was probably largely owing to very prompt and vigorous use of atropin after the operations of these groups. It is scarcely fair, therefore, to count these four inflammations of group (3) which happened before the free use of atropin was instituted, in comparing the three groups.

‡ At the close of the operation moderate bleeding into the anterior chamber is disregarded, as complete absorption always, I believe, takes place. It is different with hæmorrhage, from injury or otherwise, some days after operation, in these cases some organised remains are at times left permanently.

* One of these cases had been treated for some time by the Hospital Assistant for chronic conjunctivitis, the palpebral membrane was still very red and rough at the time of operation. The other two conjunctivæ had simply been washed out for a few days and were considered fairly normal at the time of operation, and therefore rather less than the full amount of lotion was used for them.

timing, and it can be obtained quite early enough by drops instilled just after operation. It is curious that in the simple operation (without iridectomy) exactly the opposite means, dilatation of the pupil with atropin, should have been recommended with the same object, to prevent prolapse of the iris. It is supposed to act by avoiding damage to the sphincter of the pupil during the passage of the lens. Between the two extremes an ordinary intelligence is fain content to let one's practice lie.

B After operation—We at present use eserine immediately after operation in one set of cases only,—simple extractions in which the pupil does not contract well afterwards, but remains more or less irregular and perhaps a little displaced upwards. Iridectomy is recommended for this, eserine being considered useless. One instillation certainly is practically useless, and the reason is simply that the drops are washed away by lacrimal fluid or aqueous, or both. If one watches the closed lids for half a minute after instillation one sees the faintly coloured solution, much diluted, appear from between the lids and flow away. But if the drops, four grains to the ounce, are put in three or four times at intervals of a minute, a very definite result on the pupil is obtained. We have used the drug repeatedly of late in this way, and the only failure was in a case where there had been escape of vitreous.

At the first dressing, twenty-four hours after operation, atropin is generally instilled, once or more. If the iris and pupil do not appear quite clean, six drops of solution, four grains to the ounce, are used at intervals of five minutes, the excess being each time drained away at the outer canthus, and in a few instances two or three more drops are added the same evening. The assistants are ready with opium to treat symptoms of poisoning. The almost invariable after-use of atropin appears to be the necessary corollary to the use of strong perchloride before operation, to counteract the transient reaction to lotion and traumatism combined. As regards infection, the very energetic early use of atropin has practically done away with the attacks of iritis, ordinarily liable to come on some days after operation. And it has helped to resolve several most threatening early beginnings of severe inflammation, but for it we should almost certainly have had to chronicle more panophthalmitis at this hospital. For example,—

On January 2nd of this year an eye operated upon the day before by simple extraction, with removal of opaque capsule and escape of vitreous, was found with prolapse of iris and definite infection of the eye. There was already exudation, chiefly to be seen just within the margin of the pupil, and after the prolapse had been excised, with some further loss of vitreous, a band of creamy exudation was seen lying against the position of the ciliary body. The case looked as though it might

rapidly go on to panophthalmitis, though there was little pain and little lid swelling. The eye was left unbandaged, but covered with lint wet with 1 in 5,000 perchloride, and the conjunctiva washed out freely three times a day with strong perchloride, and as much atropin used as the patient could stand. The pupil dilated fairly easily, and the inflammation went down, in spite of a good sized traumatic ulcer that formed on the corner, the result of abrasions due to stupidity of the patient. On February 12th the vision with + 13 D was fingers at 3 feet, and there was a prospect of further improvement (the amount of astigmatism was not tested).

Prolapse of the iris is not allowed to interfere with the use of atropin, if otherwise indicated. In fact, a prolapse uncovered by conjunctival flap may be a channel for a certain amount of infection to enter the eye, and may therefore necessitate the free use of atropin after excision of the prolapse.

Extraction within the Capsule is with us commonly reserved for over-ripe cataracts in which the capsule is not only opaque, but also too tough to be torn by the cystotome. I have been surprised and disappointed to find the average visual acuteness obtained by this operation, tested by spherical lenses on discharge from hospital about a fortnight after operation, to be certainly no better than, and perhaps rather inferior* to, that obtained by the ordinary operation. How the eventual results of removal of capsule compare with cases in which a free central opening in the anterior capsule has been secured, is largely a matter of conjecture. There is no collected evidence on the point, as far as I know. Even in over-ripe cataracts it is comparatively rare to find the posterior capsule at all opaque at the time of operation. To what extent, and in what particular cases, lens cells may afterwards spread over it and proliferate is quite uncertain, in many cases it is impossible to distinguish clearly afterwards between anterior and posterior capsule. And one must, of course, distinguish the cases of after-cataract or opaque capsule which are due to organised lymph or blood-remains deposited on the capsule.

Personally I prefer, when practicable, to remove opaque capsule with iris forceps at the close of an ordinary combined extraction† (with iridectomy), rather than to take out the lens in the capsule. This is done after the final curetting of the conjunctiva for the removal of mucus (and organisms?), also there appears to be less liability to large escape of vitreous. It is I believe, only in the Punjab nowadays that the bolder method of complete removal is extended

* Whether disturbance of the vitreous or a higher average grade of corneal astigmatism account for the poor vision I cannot at present say.

† It is impracticable in this country, as a rule, to consider the question of dealing with opaque capsule by a second operation.

to cataracts with transparent capsule. It is assumed, without definite evidence, that the average visual acuteness eventually obtained is higher than when the capsule is simply freely opened. And the very exceptional dexterity attained by operators who extract over a thousand lenses annually enables them to reduce the two main risks of the operation—(1) incomplete removal of cortex owing to premature rupture of capsule, and (2) loss of vitreous to a comparatively low figure. Confining the operation to over-ripe cataracts exclusively, it is only with the latter complication that we have any considerable experience at this hospital. During 1900 I only extracted 31 lenses within the capsule. And in seven of these there was no choice of method, for in five there was escape of vitreous before the lens came and in the remaining two the patient squeezed out lens and vitreous humour together. Among the 25 operations deliberately undertaken there were six recognised vitreous losses, *ie*, 24%, whereas among 480 ordinary extractions of the same year there were only eleven losses,* *ie*, 2.3%. Besides these operations, in ten others opaque capsule was pulled out with iris forceps, with three escapes of vitreous, and three opaque posterior capsule was punctured, giving one vitreous escape.

Results of Loss of Vitreous—Among the total 28 vitreous losses of 1900, just mentioned, there were several bad results. Besides two severe primary infections already discussed, two patients went out with detached retina and another came back a few months later with the same.

Another fairly frequent effect of loss of vitreous is displacement of the iris. In small losses the iris tends to prolapse, large losses may lead to a curious enlargement and distortion of the pupil, which I have not seen described. At the first glance one might think an enormous iridectomy had been done. The upper half of the iris has disappeared, retracted behind the scleral margin, and can only be seen, narrow, thin, and atrophic, by oblique illumination, eserine has no effect on it. The pupillary margin of the lower half of iris arches across, slightly curved, somewhere about the middle of the cornea, to disappear at either end behind the sclera. I have seen an approach to this condition after extraction within the capsule, though there had been no loss of vitreous at the operation, reminding one that in this operation, where nothing is left to keep the vitreous in its place, there may be many undetected leakages after the bandage has been applied.

* Including one due to expulsive intra ocular hæmorrhage, the only case I have ever had in cataract extraction.

SENILE CATARACT AS A CAUSE OF GLAUCOMA

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I HAVE notes of twelve cases of **congestive glaucoma**,* mostly sub-acute, of which senile cataract appeared to be in part the cause. The evidence which forces one to this conclusion is as follows—

1 The cataract was in all cases of the kind which leads to shallowing of the anterior chamber. In nine instances it was in what is known as the swollen second stage, with brighter sectors, in the remaining three it was the later development of this form of cataract, *viz*, the Morgagnian, with fluid cortex. There must with these lenses be the same tendency in some degree, to affect tension as is recognised in swollen traumatic cataract and in some partial luxations of the lens.

2 Another factor, and probably an essential one, in the production of high tension in these cases is a predisposition to glaucoma. This was seen in some of my cases in a shallowing of the anterior chambers of the unaffected fellow eyes. In four of the twelve fellow eyes the anterior chambers had been altered by extraction of the lens, in another by a very over-ripe shrunken tremulous cataract (Morgagnian with all the fluid absorbed), and of another there is no record. Thus only six anterior chambers are left for examination, in two it was doubtful if there was any shallowing, but in the remaining four† it was well marked.

3 The special feature of these cases, which separates them at once from ordinary primary congestive glaucomas, is a very shallow chamber, in all the cases where the comparison could be made (as above), the anterior chamber was *shallower than the shallow chamber of the predisposed, but not actually glaucomatous, fellow eye*. This condition is, according to my present experience of *congestive glaucomas* absolutely limited to this group of cases. In my note-books I find a few cases of congestive glaucoma of one eye only in which there was no appreciable difference between the anterior

* One case is included in which the rise in tension was very slight, the pupil was a little dilated, and its reaction somewhat impaired. The notes of this case are incomplete, and it is not stated whether ciliary injection was present. Ciliary injection was faint in another case, and moderate in another. In all the remainder it was considerable, eight of them were sub-acute and one acute (this attack immediately followed extraction of cataract from the fellow eye).

† In one of these eyes there was chronic glaucoma. There was no trace of injection of the eye, but the pupil was very sluggish and a trifle enlarged, there was slight cupping of the disc $\frac{1}{2}$ (refraction not tested) and the eye felt hard, though not so hard as the congested and cataractous eye.

chambers of the two eyes, but in the large majority the chamber of the affected eye was deeper than that of the unaffected (predisposed) eye, in chronic congestive cases, with both eyes affected, the more advanced eye usually had slightly the deeper chamber.

4 Early glaucoma is rarely associated with other forms of cataract, because with them the lens is usually smaller than normal. Apart from advanced glaucomas, in which cataract was probably largely the result of high tension, and apart also from the twelve cases now under consideration, the only cataracts with glaucoma of which I have notes are two instances of hyperseleosis (therefore large lenses), and two others of which the notes are incomplete, probably cases similar to the twelve.

5 The separation of these cases from ordinary primary glaucoma is further strongly borne out in their treatment. In the first place, three of the cases gave a very remarkably complete response to the action of eserine. The tension was rendered by it distinctly *sub-normal*. One of these three eyes was quickly operated upon, the other two under out-patient treatment soon became hard again, and no longer reacted well to eserine.

The correct treatment appears undoubtedly to be early extraction of the lens with iridectomy, after reducing the tension, if possible with eserine. This was done in eight cases. They all went away with useful vision, and none of them have returned with any complaint*. On the other hand in two cases, attempts at treatment on orthodox lines proved unsatisfactory.

On one eye a good iridectomy was done, with conjunctival flap. The anterior chamber completely failed to refill. Twenty-three days later the tension rose, with pain. Two days after this most of the lens was removed, with much difficulty owing to the absence of anterior chamber, some vitreous was first let out through a posterior scleral puncture, some cortex was left. Thirteen days afterwards the patient went out, seeing only moving bodies, but with a good field of projection, anterior chamber still very shallow, and tension doubtful. A week later the tension was +1 or +2, and eye painful. A posterior sclerotomy was done, but the patient was tired of treatment and has not been seen since.

In the other case out-patient treatment with eserine and tappings failed to do any good. The patient then consenting to come into hospital, an iridectomy was done. Nine days later the tension was up again. Twenty-five days after the iridectomy the lens was extracted without difficulty, the cataract being Morgagnian, only a small incision was needed to let out the small nucleus. Eleven days later the patient went out seeing fingers at 7 feet with a spherical lens. But the tension again rising, the vision got reduced to fingers at 3 feet. Thirty-two days after the extraction a sclerotomy upwards was done, dividing the adherent base of iris. Now, nine days after the

operation, the vision* is fingers at 12 feet, but the anterior chamber is still rather shallow, and it is doubtful whether the tension may not rise again.

The first of these cases appeared a very promising one, it was one of the three which reacted so fully to eserine at first, and it was quite an early case, but the treatment signally failed. It is as yet difficult to forecast the end of the other case. There remain still two patients of the twelve. One of them disappeared after out-patient treatment by eserine and tappings, the other did not attend for treatment.

This small group of glaucomas is difficult to classify. In so far as they are due to cataract they are secondary glaucomas, but in other respects they belong rather to the primary division. Besides the probable usual predisposing cause, whatever it may be, the ordinary exciting causes of glaucoma may come into play. For example, take my acute case following extraction performed on the fellow eye.

AN ANALYSIS OF THREE HUNDRED CONSECUTIVE CATARACT EXTRACTIONS

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THE patients upon whom these extractions were performed include a variety of races, Bengalis, Beharis, Mundas, Oraons, Baluchis, Afghans, &c, but no analysis as regards race will be attempted as the numbers do not justify it and no useful conclusions could be arrived at.

GENERAL

General results—The 300 extractions were done in 246 patients, 54 patients having both eyes operated upon. The results were good in 244 (83.20 per cent), indifferent in 29 (9.9 per cent), bad in 20 (6.82 per cent), and not ascertained in seven cases.

Good results mean vision ranging from $\frac{3}{8}$ to $\frac{5}{8}$ with correcting glasses,† indifferent results where sight was dim, but the patient could go about and see surrounding objects fairly well, and bad results where there was total loss of sight from suppuration or plastic iritis, &c. The cause of failure was nearly always sepsis.

Double extractions were performed at the same time for unavoidable reasons in six patients. Eleven of the eyes did well, but in one eye intraocular hæmorrhage followed on some "fits" some hours after operation and the eye was lost. In all other double extractions the second eye

* One cannot expect after histories here, and several of the cases are quite recent. One of the patients squeezed out the lens in its capsule with vitreous, and in another case opaque posterior capsule was removed by forceps with out loss of vitreous.

* It is impossible to take visual fields in our hospital practice, owing to press of work.

† All were not tested or proved to have reached this standard, but many were, and the rest were judged to have about reached it.

was done after an interval of several days or weeks

Testing vision after extraction—For the majority of the patients who were illiterate Snellen's test types in Hindi or English could not be used. Square black dots were prepared by taking Snellen's distance types and filling in with Indian ink the entire square occupied by each letter. The dot thus subtended an angle of 5 minutes at the distance marked. A long narrow white screen was then prepared with a rectangular hole in it large enough to expose a limited number of dots through it at a time, and by raising or lowering this and making the patient count the dots exposed, the vision could be pretty accurately tested and glasses prescribed.

Family history—In 66 cases where enquiry was made a family history of cataract was obtained in seventeen instances or 25.7 per cent. In ten cases the father had had cataract, and in two of these the mother as well. In eight of the ten the eye had been couched by a 'sattya'. In one case the mother had cataract, in two instances brothers suffered, in two more sons and in two paternal uncles (total 17). In two cases husband and wife both had cataract.

Association with other diseases *Epilepsy*—Two patients were epileptics, another had had a fit of doubtful nature in his life, and one was the daughter of an epileptic mother. One epileptic was a man, aged 30, who became severely epileptic at 20, and whose sight, perfect before, gradually became dim afterwards. The lenses looked like lamellar cataracts *in situ*, but after removal the nuclei were found to be involved also. The man's father (seen) had been successfully couched for cataract. The other epileptic, a clerk aged 36, had been temporarily insane four years previously, and on recovering after three months was found to have diabetes. He had occasional epileptic fits. When first seen he had wedge-shaped cortical opacities. He did well and obtained $\frac{5}{6}$ with glasses.

Diabetes—Only three diabetic cataracts were met with in the series, although the urine was tested in 145 of them (*vide infra*). The epileptic just mentioned was one. Another was an Oriya Christian, aged 36, with diabetes of four years' standing in whom cataract began two and-a-half years after its onset. The third was a Kandoo woman, aged 35, in whom the cataract appeared to be of longer standing than the diabetes. Her father and mother both had cataract. In the two first cases the cataract ripened rapidly, in the third slowly. The results were good in all.

Albuminuria—One old chuprassi's urine contained a considerable quantity of albumen. His eye did well, though he suffered from erythropsia during recovery, and for some time after complained of everything looking dazzlingly bright.

Bronchitis—Seven patients had bronchitis—not always discovered before operation. One

did badly, the eye suppurated. We found he kept his sputum in a small cup under his pillow.

Age, sex and diet—Some notes were made to try and ascertain if vegetarians develop cataract earlier or later than meat-eaters. Of the 212 recorded, 141 were meat-eaters and 71 only vegetarians. Of the 141 meat-eaters (89 males and 52 females), 18 were aged 40 or under, 90 over 40 up to 60, and 33 over 60. Of the 71 vegetarians (47 males and 24 females), were 40 or less, 47 from 41 to 60, and 16 over 60. If 50 be taken as the dividing line, the meat-eaters had 56 below and 85 above 50 years of age, while the vegetarians had 37 below and 34 above that age. Ages have to be guessed at usually, and these figures represent what the patients looked probably rather than what they were. The average age of the 212 patients works out to 51.7. This agrees with the general belief that cataract appears at a younger age in the tropics (see Dr. Hirschberg's paper "On Cataract Picking of the Hindus"—translated in the *I M G*, June 1894).

Duration of cataract—The length of time there had been dimness and also blindness (*p. l.* only) was recorded. The number of observations was 159. The average duration of the cataract before operation (*i.e.*, dated from the beginning of dimness of vision) was in those under 40 years of age $2\frac{2}{3}$ years, in those between 40 and 60, $2\frac{1}{2}$ years, and in those 60 and over $2\frac{1}{2}$ years. The average duration of blindness (*p. l.* only that is) before operation was in those under 40 one year, in those between 40 and 60 $1\frac{1}{2}$ years, and in those 60 and over $1\frac{3}{4}$ years.

Urine examination—Carried out in 145 patients, albumen was found in only one case (0.07 per cent), sugar in three (2.07 per cent), and phosphates in 33 (22.7 per cent). The percentage having phosphates is rather remarkable. The specific gravity of the urines examined ran rather low too. Of 20 patients under 40 years of age 4 were 1010 or under, and 12 between 1011 and 1024, of 65 between 40 and 60, 21 were 1010 and under, and 37 between 1011 and 1024, while of 60 patients 60 years and over, 18 were 1010 and under, and 39 between 1011 and 1024. Males predominated at each age period.

In 129 patients the question of the relation between specific gravity and diet was noted. No difference worth mentioning however came out, the average specific gravity in meat-eaters being 1014.8 and in vegetarians 1014.4. The specific gravity was taken from one specimen only in each case, usually the early morning urine, in which it is usually higher than during the rest of the day.

LOCAL CONDITIONS.

Acus semilis was present in 38 eyes with 33 good results, 2 indifferent, 2 bad, and 1 un-

known The results were in no way influenced by the arcus senilis

Pigmentation of conjunctiva was present in 76 eyes with 59 good results, 7 indifferent, 7 bad, and 3 unknown It had no apparent influence

Pterygium was present in 61 eyes with 53 good, 3 indifferent, and 5 bad results Though pterygium had no apparent influence upon the ultimate success of the operation, it caused embarrassment in making the incision and often free hæmorrhage It is advisable to either remove it at the time of extraction or previously

Conjunctivitis had a considerable influence upon the results It was present in seven of the cases that did badly On the other hand, it was also present in 29 cases that did well and one that did indifferently No case of course was operated upon in which there was acute conjunctivitis or trachoma The cases included in these figures were those in which small flakes of mucus were present in the conjunctival sac, and it would have been better had it been possible to postpone operation

Leukoma—Extraction was performed in four eyes in which there was leukoma and adhesion of iris to the back of the scar One man obtained $\frac{5}{8}$ in each eye, another good vision, but in one (the first) suppuration followed, and the eye was lost

Ripeness of lens—There were 54 unripe cataracts with 41 good, 8 indifferent, and 5 bad results, the bad results could not be in any way attributed to the immaturity of the lens There were 25 over-ripe lenses removed with 20 good, one indifferent and 4 bad results—not attributable to the hypermaturity of the lens except in perhaps one case where intra-ocular hæmorrhage followed In 68 cases the lens cortex was liquid and like milk, with 63 good, 1 indifferent and 4 bad results, nor attributable to the liquid state of the cortex, which indeed generally is accompanied in my experience by the best results, trouble being more often experienced at the time and afterwards when the cortex is glutinous In 16 cases there were calcareous looking dots on the anterior capsule, with 15 good and one indifferent result

An attempt was made to ascertain if the diameter of the cornea bears any relation to the size of the lens In 61 cases careful measurements were made by means of a tiny pair of steel calipers fitted with a screw, and a steel measure graduated to half millimetres The globe and with it the cornea vary very much in the native of India and are not nearly so constant in size as apparently in Europeans They vary with the physique of the people, some of whom in this series were very small aboriginals and some large bony Afghans The measurements were mostly taken, however, among the small inhabitants of Chota Nagpur The average horizontal diameter of the cornea in the 61 measured

was 12.05mm, the maximum being 14mm (!) and the minimum 10.5mm The lenses when removed in these 61 measured on an average 8.25mm, the maximum being 10.25 (!), and the minimum 5.75 The variations are great, but on examining the details the measurements of cornea and lens are found to vary together, and the ratio 12.05 : 8.25 may be taken as a fair guide to the dimensions of the two The diameter of the lens appears therefore to be roughly a little more than $\frac{2}{3}$ of the diameter of the cornea, or as 1 : 1.46 As will be mentioned further on, the distance between the extremities of the wound was also measured The diameters of cornea, wound and lens came out 12.05, 10.75 and 8.25mm This measurement of the wound was of course the surface or external measurement, the internal, available for passage of the lens, would be considerably less With a large lens to deliver the corneal incision was not infrequently made up to within $\frac{1}{2}$ mm of the complete diameter of the cornea, and with a conjunctival flap it is quite safe to do this

Tension was noted in 217 cases In 22 it was increased, with 17 good, 3 indifferent, and 2 bad results In 35 it was diminished, with 27 good, 4 indifferent, 3 bad and one unknown result The 160 eyes with normal tension gave 130 good results, 16 indifferent, 10 bad, and 4 unknown results Diminution of tension was regarded as more dangerous to success than slight increase, and the results bear out this view In no case was an eye with more than + or -1 touched (v complications, *infra*)

'Couching'—In sixteen extractions the other eye had been 'couched' by some quack with varying though often brilliant results. The extraction did not appear to be affected in any way by the previous couching in the fellow eye

Anæsthetic used—Two hundred and ten extractions under cocain gave 181 good, 15 indifferent, 11 bad, and 3 unknown results In five of the cases cocain crystals were used because the solution proved unsatisfactory—possibly from not being freshly prepared Eighty-two extractions under eucain gave 65 good, 10 indifferent, and 7 bad results The objection to eucain that it is so painful is a real one The pain does not last more than a few seconds, and the anæsthesia is perfect while the corneal epithelium does not become abraded I have never seen that happen even with cocain crystals however Eucain solutions can be sterilized by boiling without injury *

In eight cases chloroform was used, three were nervous excitable people, two lunatics and three because they refused to have the operation done without

Preparation for operation—As is usual in Indian hospitals a large number of the patients underwent no preparation beyond merely wash-

* v *Indian Medical Gazette*, February 1897, p. 44.

ing the sac and washing the face. In nearly half the cases the eyelashes were cut short and the edges of the lids carefully cleaned with cotton-wool swabs. This, besides rendering the eye cleaner, prevents blunting of the knife edge by contact with the hairs in making the section. Getting the ordinary Indian hospital patient even visibly, let alone surgically, clean is so difficult a task that antisepsis appears to me to be better than asepsis in eye operations in this country. In such patients as would wait twenty-four hours the face was well washed with soap and water, the conjunctival sac washed out with 1 in 2000 perchloride solution and a pad soaked in the same kept bandaged on the night before operation. The eye was irrigated the last thing with 1 in 5000 perchloride solution. Atropin was used in 244 eyes before operation, and the pupil well dilated for reasons given below. Eserin was used before operation in 28 cases, all performed by the 3 mm flap or modified linear methods in the first fifty cases, never afterwards. Instruments were treated variously. When only placed in boracic lotion 31 cases gave 26 good, 1 indifferent, and 4 bad results, or 12.9 per cent failures. When merely placed in carbolic lotion (1 in 40), 185 cases gave 157 good, 21 indifferent, and 7 bad results, or 4.45 per cent failures. In 49 cases the instruments were boiled and then placed in boracic lotion, with 44 good, 2 indifferent and 3 bad results, or 6.8 per cent failures.

OPERATION

Incision—The modified linear incision through the sclero-corneal junction was performed in 21 cases with 15 good, 2 indifferent, 3 bad, and 1 unknown result. Iris prolapse occurred in 3, iritis in 3, prolapse of vitreous in 1, and sepsis in 2 of these cases. The 3 mm



The dotted line shows the line of incision taking up a conjunctival flap

flap incision described by Swanzy was done in 28 cases with 22 good, 1 indifferent, 4 bad, and 1 unknown result. Iris prolapse occurred in 2, iritis in 1, vitreous prolapse in 6 and sepsis in 4

cases. *Scleral extraction* was done in three cases with good results. In 248 extractions a purely corneal incision was used, meaning thereby an incision lying in a plane parallel and well anterior to that of the iris (see diagram). It embraced a considerable proportion of the circumference of the cornea almost half in many cases. In 61 cases careful measurements were made of the horizontal diameter of the cornea, and of the diameter of the wound, i.e., the distance between its extremities measured by a pair of steel calipers. The average diameters of cornea and wound in these 61 cases were 12.06 and 10.75 mm. The corneal wound involved thus on an average nearly five-sixths of the corneal diameter. The reason for making the incision purely corneal was the belief that prolapse of the iris was less likely to follow, while with so large a wound the delivery of the lens when large would be easier. The percentages of prolapse of iris work out as follows, with 3 mm flap 7.1 per cent, sclero-corneal 14.3 per cent, and with a purely corneal incision 10.89 per cent. Other factors are concerned of course, but these figures support the usually received theory that corneal are safer than sclero-corneal wounds as regards prolapse. The 248 corneal incisions gave 208 good, 23 indifferent, 12 bad, and 5 unknown results, with prolapse of iris 27, of vitreous 35, iritis 18 and sepsis 8.

Conjunctival flaps were made in 113 cases with 94 good, 9 indifferent, 7 bad, and 3 unknown results. Large purely corneal incisions can only safely be made when combined with conjunctival flaps. To obtain them it is necessary to turn the edge of the knife down towards the globe just before completing the incision. Bleeding, more or less free, occurred in 13 out of the 113 cases, but in no instance did any harm result. Thirteen out of the 113 flaps were sutured with fine silk. This detail was omitted after fair trial however because the suture appeared to set up conjunctivitis, and the advantages gained from it did not appear sufficient to counter-balance this risk.

Iridectomy—In 177 iridectomy was performed with 81.9 per cent good, 7.9 per cent indifferent, 7.3 per cent bad, 12.9 per cent unknown results. One hundred and twenty-three cases without iridectomy gave 81.3 per cent good, 11.38 per cent indifferent, 6.5 per cent bad, and one unknown result. Those with iridectomy were followed by prolapsed iris in 6.78 per cent, by iritis in 6.78 per cent, and 3.38 per cent required secondary operations (needling). Those without iridectomy were followed by prolapsed iris in 16.2 per cent, by iritis in 8.9 per cent, and by needling in 7.39 per cent. Prolapse of the iris was therefore more than twice as frequent after the simple extraction, iritis and needling were also commoner. This excess of prolapses occurred in spite of the fact that whenever a tendency to prolapse was observed

at the operation an iridectomy was at once performed, and such cases thus came into the list of those iridectomised. The tendency was removed by the iridectomy. The percentage of prolapse is high, but the impossibility of keeping most of the patients in bed even a few hours must be taken into consideration. One usually finds the history of sudden pain coming on after exertion a few hours after operation. In several such cases the prolapse was at once excised, the pillars of the coloboma stroked into position, and the eye healed without further trouble or complication. Unless the lens appeared unusually large, or over-ripe or immature or there were complications evident, the operation was usually begun with the intention of making it a simple extraction. On the occurrence of any complication or difficulty in extraction an iridectomy was performed.

Opening the capsule was always done with a sharp cystotome except in 19 cases where the cataract was removed in its capsule. In the last 131 extractions the capsule was opened low down as advocated by Colonel Geoffry Hall, I.M.S. and the results as regards vision appeared to me to be better when this was done. The nineteen cataracts removed in their capsules were followed in thirteen instances by prolapse of the vitreous, and though this did not appear to affect the result up to the time of discharge, the cases were not seen long enough afterwards to enable one to say that no evil effects, such as detached retina, &c., had ensued.

Removal of capsule and soft cortex—Removal of the lens in its capsule as advocated and so successfully performed by Captain H. Smith, I.M.S., does away with all difficulties regarding opaque capsule and glutinous cortex. The after-results of such eyes need to be followed up and found satisfactory before it will be generally adopted. The best results will probably be obtained by opening the capsule low down—so that the lens in its passage out carries with it the bulk of the anterior capsule,—and by removing any soft cortex left behind by merely gently stroking the cornea from below upwards. The introduction of any instruments into the anterior chamber for the purpose is strongly to be deprecated. 'Stripped Keratitis' is one of the least of the evils likely to result from such meddling.

AFTER-TREATMENT.

Irrigation—If this is done before operation, and if clean instruments are used and nothing septic introduced, irrigation afterwards seems unnecessary and may cause harm by making the patient screw up his eye. Any blood or soft cortex or aqueous lying between the lids was merely wiped away with wool soaked in 1 perchloride 1 in 5000.

Iodoform was dusted along the lid edges in 217 cases with 182 good, 21 indifferent, 11 bad, and 3 unknown results. The percentage of bad results when iodoform was used was 5.1 compared with 11.3 per cent in cases where it was not used. Thus although iodoform is not supposed to be of use unless sepsis is actually present my results have led me to believe in its value.

Bandaging—With most native patients it is very difficult to prevent them lifting up their bandages to try if they can see and also to enable them to move about as they obstinately do when your back is turned. To put a stop to this, I have for a long time bandaged the operated eye only when there was any vision at all in the other. One hundred and seventy-five cases had only one eye bandaged with 146 good, 19 indifferent, 8 bad, and 2 unascertained results, and in no case could any bad effect be attributed to the method. As a rule, the patient is content to leave the eye untouched, and the results improve correspondingly. The open or ambulant treatment carried out by Dr. Johann Hjort of Christiania (see *Indian Medical Gazette*, June 1898, p. 236) is often practised by our patients against our wishes but with worse results than he has had. The cases described in this paper were invariably opened and the eye examined within 24 hours, no ill effect was ever traced to this practice which has much to recommend it. A shade was generally applied within a week, unless contra-indicated, as e.g., in four cases where the union of the wound was delayed, or where the iris prolapsed. Atropine was nearly always used at the first dressing, but not again, unless especially indicated. In 16 of the earlier cases eserine was used, but was given up entirely thereafter.

Length of stay in hospital—The stay in days in hospital was recorded in 184 patients. Of these 150 ending in good results stayed an average of 10.9 days in hospital after operation, 19 ending indifferently stayed 16 days each, and 15 had stayed 20.6 days each. It is rather remarkable that of 46 patients who only stayed in hospital a few hours and then went home and attended daily afterwards 35 did well, while 7 had indifferent and 4 bad results. Needless to say these patients left without leave. They were nearly all patients in remote uncivilised places where patients cannot be induced to remain in hospital at night. One would have expected a larger proportion of poor results from such 'ambulant' treatment.

COMPLICATIONS.

Hæmorrhage—From 113 conjunctival flaps bleeding occurred 13 times without evil result as already mentioned. From the cut nris in 177 iridectomies bleeding occurred 30 times. The blood was absorbed slowly but completely from the anterior chamber.

Too small an incision was made in 12 instances. It was enlarged without difficulty with scissors. The iris was wounded by getting in front of the knife edge in 27 instances. If the cut was at all extensive an iridectomy was at once performed, other wise the iris was left alone.

Irritic adhesions to the anterior capsule were met with in 67 cases. Of these 57 did well, 5 indifferently and 5 badly. The complication makes the prognosis as to ultimate vision worse, and of course it makes the operation more difficult. The European Surgeon can hardly realise the rarity of entirely uncomplicated cases in India, and in estimating our results these facts as well as others already mentioned—difficulty in obtaining asepsis, in ensuring rest, &c—should be taken into account. In 32 cases the cornea became concave after operation. It soon filled out again of course when the aqueous was secreted. Twenty-four of the cases did well, 3 indifferently, 4 badly, and in one the result was unknown. I have come to regard it as rather an unfavourable sign.

Mercurial cloudiness of the cornea, due to the action of the corrosive sublimate solution used, occurred in 32 cases, in 10 of which it took the form of 'stippled keratitis'. Descemet's membrane had probably been injured by instruments introduced to remove cortex or capsule left behind. In 23 of the 32 cases instruments were so introduced, and in the remainder the lenses were so large that considerable pressure was necessary to express them, and possibly Descemet's membrane was injured in that way. The after-effects were not serious, the cloudiness—whether diffused or stippled—cleared up, and in 31 cases the after-result was good, in only one was it indifferent. In 29 other cases instruments were introduced into the anterior chamber for removal of cortex or capsule without any cloudiness resulting.

Cystoid cicatrix occurred in three cases. In two an iridectomy had been done, and the dilatation of the cicatrix occurred 11 and 28 days after. Good results followed—in one after incision, in the other with pressure only. The third case occurred 6 days after operation without iridectomy. The eye went to the bad. In none of these three did iris or capsule appear to be involved in the wound.

Prolapse of iris occurred in 10.66 per cent. of all cases, there being 6.78 per cent. in cases with iridectomy against 16.2 per cent. in cases without. The circumstances under which these prolapses occurred have already been considered under the heads *incision* and *iridectomy*. Prolapses occurred most frequently in simple extractions and with incisions that were not purely corneal but sclero-corneal. Another important cause of prolapse is bruising of the iris by the passage of a large lens or of an average lens through too small an incision. The two main causes of prolapse are (1) insufficient provision for

free escape of aqueous in case of sudden effort on the part of the patient, and (2) bruising of the iris, leaving it flabby and non-contractile. The latter can be avoided by making the corneal incision large enough, and this can practically be made any size you wish by adding a conjunctival flap. The former cause can best be removed by performing a narrow iridectomy and by having the pupil well dilated with atropine before operation and keeping it so after. Iridectomy provides a sluice for aqueous to pass from the posterior to the anterior chamber without pushing iris in front of it, as described by Swanzy. Atropine acts by providing a circular instead of a radial sluice. The larger the pupil the freer the communication between the interior and posterior chambers, and the less chance is there of a gush of aqueous carrying iris in front of it into the wound.

Prolapse of vitreous occurred forty-one times or in 14.3 per cent., of which 30 resulted in good and eight in indifferent and three in bad vision. As already stated, thirteen of them occurred in cases where the lens was removed in its capsule. Eighteen prolapses followed iridectomy and 23 more in simple extractions. Fifteen of them occurred before extraction of the lens and the rest after. In six the vitreous was thin, in the rest of normal consistence. In eight the lens was overripe. The tension was increased in two only, diminished in twelve and normal in the rest. There were conjunctival flaps in eighteen of the cases, none in the other 23.

Intra-ocular hæmorrhage occurred in four cases, in two of which the eyes were lost, and in two some vision remained. In only one was the tension *plus* one before operation. It was a case of chronic glaucoma with opacity of lens and fan p. l. It was intended to do an iridectomy and extract later, but lens and vitreous escaped followed by hæmorrhage. In one case the tension was —1 in a man in the early stage of paralysis agitans. He screwed his eyes up and shot out lens and vitreous, and bleeding followed. The other two had normal tension, but one lost vitreous at the operation. In the other the lens was overripe, and hæmorrhage came on after several hours, after vomiting and 'fits'. Eserine had been used because there was a tendency to iris prolapse and may have caused vomiting. The patient, aged 75, had gone home a few hours after operation.

Discission was performed after fifteen extractions, in six done with iridectomy (3.38 per cent. and in nine without (7.38 per cent.). The numbers give no real indication of how frequently the operation is necessary, as of course some patients whose acuteness of vision would have been improved by it, were either unwilling or did not stay long enough to have it done.

Extraction in lunatics was performed on four eyes in three lunatics. One woman had both eyes done, one under chloroform with iridectomy, the

other some years afterwards with iridectomy under cocaine. Vitreous prolapsed in the latter, but both eyes did well, and her mental state improved with the cure of her blindness. Another in a man, done under chloroform with iridectomy, suppurated. The patient became unwell after operation and opened the dressing. The fourth was done without iridectomy in a rather unwell man under cocaine. He got prolapse of the iris, but the eye did well, and from being quite blind he could see, and his mental state improved somewhat.

Delayed union of corneal wound occurred in four cases without apparent cause.

Erythropsia was met with in two cases and gradually disappeared.

GENERAL REMARKS

FROM the analysis made it will be seen that the main cause of failure (=682 per cent of the 300 cases) was sepsis. In two cases only out of the 20 that failed was the failure due to another cause—intra-ocular hæmorrhage. In people who will not wait and submit to the preparation required by aseptic surgery, and who frequently render all one's best aseptic efforts futile by moving about, opening their bandages and sticking dirty fingers into their eyes, sepsis will probably always be the main cause of failure. Since I have taken much more elaborate precautions and refused to operate unless patients would wait and be properly prepared, and have sterilized, face, eye, hands, instruments and dressings, I have had about the same results as before when simpler measures were adopted. The reasons for this are, it seems to me, two-fold. No amount of asepsis has prevented subsequent infection of the wound by the patient, and asepsis in such patients is inferior to antiseptics. Asepsis alone will, I believe, in the ordinary Indian hospital patient prove a failure. Antiseptics as regards the patient, the dressings and lotions combined with asepsis on the part of the operator and instruments is most likely to lead to good results. We must be prepared to meet—and kill—a number of germs that survive all aseptic preparatory measures, and this can only be done by using antiseptics. Every one knows the practical impossibility of sterilizing the operator's hands, and the difficulty of even rendering them free from pathogenic bacteria. If this is true of hands that can be scrubbed and soaked, how much truer is it of our patient's greasy faces and heads. The essence of aseptic surgery is the absolute exclusion of all sources of infection. If it breaks down anywhere it breaks down everywhere, and only antiseptics can then save—often cannot save—the patient. Asepsis is ideal, antiseptics more practical. As regards the other cause of absolute failure—intra-ocular hæmorrhage—the complication itself

is hardly amenable to treatment beyond bandage pressure. To prevent its occurring, eyes with altered tension and over-ripe lenses should be regarded with suspicion, and every precaution taken to prevent vitreous prolapse, *eg.*, by doing a preliminary iridectomy and operating without a speculum or removing it as soon as the incision is completed.

CATARACT OPERATIONS AT JAIPUR

By P. DURRELL PANK,

Lieut. Col., I.M.S.,

Residency Surgeon and Superintendent of Dispensaries, Jaipur.

THE following STATISTICAL shows the number of cataract operations (extraction of lens) performed at the Mayo Hospital, Jaipur, and at District Dispensaries in the Jaipur State during ten years—from 1891 to 1900—

YEARS	No of successful operations	No of unsuccessful operations	Total No of operations	Percentage success	REMARKS
1891	179	9	188	95.21	
1892	544	42	586	92.83	
1893	225	10	235	95.74	
1894	268	13	281	95.37	
1895	549	29	578	94.98	
1896	979	41	1,020	95.98	
1897	779	31	790	96.08	
1898	614	26	640	95.94	
1899	624	26	650	96.00	
1900	315	27	342	92.10	
Grand Total	5,056	254	5,310	95.22	

For the ten years, 1891-1900, Colonel T. H. Hendley, CIE, I.M.S., and Lieut-Colonel P. Durrell Pank, I.M.S., performed the duties of Superintendent of Dispensaries and Vaccination, Jaipur, Rajputana, for almost equal periods of five years each, and of the operations referred to in the above statement—

Colonel Hendley performed	2,494
Lieut. Colonel P. Durrell Pank	2,414
Assistant-Surgeon DaGang Singh, House Surgeon, Mayo Hospital, Jaipur	304
Various operators	98
Total	5,310

The following brief remarks refer only to my own cataract operations and experience in ophthalmic work. Colonel Hendley is now on furlough in Europe, and if he could have had an opportunity to make any remarks on his cataract operations or in regard to his great experience in Eye Surgery, I am sure they would have been very useful and interesting.

In regard to my own work and experience I make the following brief remarks. After many and extended trials of various Operations for

the extraction of the ripe lens, including operations in which the capsule is not ruptured, in which the iris is left intact, with the incision in the corneo-sclerotic margin, in the clear cornea and at various angles ranging between the centre of the pupil and the upper margin of the cornea, I have come to the conclusion that the operation giving the best results in the long run and in the greater majority of cataract cases is that known as the **Three Millimetre Flap Operation** and described by Mr. Swanzy of Dublin in his "Handbook of Diseases of the Eye" I suppose it would be incorrect to speak of any particular operation for the extraction of the lens as faultless, but my experience in cataract operations confirms me in the belief that the Three Millimetre Flap Operation is the least faulty and gives the best results.

I have also used a large number of various so called **Antiseptic Solutions** for washing out the conjunctival sac and am now using a solution of boric acid 8 grains to one ounce of distilled water which gives as good, if not better results than chinosol, corrosive sublimate and other solutions.

Neither atropine nor eserine is put into the eye before operation, and one drop of atropine solution is dropped in when the operation is completed. One or two drops of a 4% solution of cocaine placed in the conjunctival sac twice, before the operation at an interval of a few minutes is found to give quite sufficient anaesthesia. I have good reasons for believing that if a large quantity of cocaine solution be used unpleasant results may follow, on one occasion when operating on several cataracts in a district dispensary an over zealous dresser managed to instil more than one grain of cocaine solution into the eyes of each patient before they were placed on the operation table with the result that many of them vomited, some complained of great dizziness three developed symptoms of delirium and several of the eyes were lost by subsequent suppuration.

I find counter pressure on the upper wound flap made with a curved strabismus hook to be most useful in clearing the anterior chamber of capsule and lens matter when used in conjunction with upward pressure by a spoon or curette on the lower portion of the cornea.

After the operation is finished the closed lids of each eye are covered with very thin muslin which is saturated with vaseline, and two pads of absorbent wool wet with distilled water are applied and a bandage over all. If cataracts in both eyes are ripe both lenses are extracted at the same time, if one is ripe and one unripe the ripe one is extracted, and at the same time the unripe one is treated by a preliminary iridectomy, and the lens is gently rubbed by Forster's method. I have found that unripe cataracts treated by this method give most excellent results.

Twenty four hours after the operation the bandage and dressings are changed and one drop of atropine is put into the eye, if there is pain in the eye, 5 grains of phenacetin is given, if this fails to give relief, and if there is much redness of the conjunctivæ, six or more leeches are applied to the temple, if suppuration is anticipated or feared the wound is brushed over with a 20 grain solution of nitrate of silver. In an ordinary normal case after operation one drop of atropine solution is put in the eye every third day, and this is found to be quite sufficient, and the bandages, as a rule, are removed on the sixth or seventh day and dark spectacles are then worn the patient leaving hospital on the tenth or twelfth day, each case is given a pair of spectacles ranging from +9° to +12° for ordinary vision, and if literate they also are provided with a higher power for reading.

Prolapse of the iris after the three millimetre operations is, in my experience, very rare indeed, loss of vitreous of itself and in moderate amount does not appear to be detrimental to the final result, though I regard loss of vitreous during operation to be often due to other diseases of the eye than simple cataract or the operation to extract it.

EXTRACTION OF CATARACT IN THE CAPSULE

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TABLE I

Cataract Extractions in Jullundar Civil Hospital from June 1st, 1899, till May 1st, 1900

	Numbers	Prolapse of Iris.	Iritis.	Escape of Vitreous.	Capsule giving way during operation
Extraction of lens in capsule without iridectomy	692	7 or 1.01 p.c.	4 or 0.6 p.c.	96 or 14 p.c.	88 or 11.4 p.c.
Extraction of lens in capsule with iridectomy	78	2 or 2.5 p.c.	1 or 1.3 p.c.		
Total number of extraction of lenses in capsule	770	9 or 1.16 p.c.	5 or .65 p.c.	93 or 11 p.c.	88 or 11.4 p.c.
Extraction with scratching of capsule	1,034	16 or 1.5	14 or 1.3	85 or 8.4 p.c.	
Total number of cataract extractions	1,804				

RESULTS—
1st Class eyes 95.5 p.c.
2nd Class eyes 2.0 p.c.
Failures 2.5 p.c.

* Twelve cases of voluntary evacuation of vitreous to prevent prolapse reduced percentage to 10.8 of involuntary escapes. These are included in the ninety-six cases.

TABLE II—FROM 1ST MAY 1900 TILL 2ND APRIL 1901

	Numbers	Prolapse of Iris	Iritis	Escape of Vitreous	Capsule giving way during operation
Extraction of lens in capsule without iridectomy	1,409	18=1 22 p c	12=0 8 p c	129=8 2 p c	141=0 3 p c
Extraction of lens in capsule with iridectomy	92	1=1 08 p c	2=2 17 p c		
Extractions by scratching the capsule with iridectomy	05	1=1 53 p c	2=3 3 p c	5=5 2 p c	
Extractions by scratching the capsule without iridectomy	21	2=8 33 p c	Nil		
Total extractions by scratching capsule	89				
Total cataract operations from 1st May 1900 till 2nd April 1901	1,600				

RESULTS—

1st Class=96 05 p c

2nd Class=2 30 p c

Failures =1 05 p c

First Class = All cases with clear vision with the aid of lenses 11 12 or 13 D

Second Class= Not clear vision with spectacles, but who have vision enough to get about with

Failures = Cases which have gone wrong from any cause

ON looking over the different books on ophthalmic surgery one is struck by the very casual mention of **extraction of the cataractous lens in the capsule**, so nominal that the inexperienced might be led to regard that operation as a surgical curiosity, whereas it should take the position of one of the two systematic practical operations the details concerning an iridectomy or no iridectomy applying equally to both. This is due to the fact that the operation is an Indian operation, and that the practical surgeon in this country has his time so fully occupied with official work that he has practically no leisure for writing. I think I am right in saying that the few of us in India who systematically practice this operation should publish our results when we can snatch sufficient time to do so. By a large series of cases thus published if we can prove by practical fact that the operation is more satisfactory than the scratching operation, others may be led to do this operation, if less satisfactory, they will at least have the value of our experience.

The surgeon's first consideration is the welfare of his patient. He selects his operation accordingly. He should at the same time not forget to regard every operation after it is done in the light of an experiment. If the surgeon does not publish his cases, it follows that his "experiment" can be of no value to others.

I may say that this is not an operation for those of little experience in the art of cataract extraction to attempt. The operator should before attempting extraction in the capsule have acquired that confidence in himself which considerable experience in the art by scratching the capsule will establish,—that confidence which implies lightness and steadiness of hand.

My opinion based on a very liberal experience of both operations is that extraction in the capsule has not more drawbacks than the operation ordinarily performed, and that it gives

the patient clearer vision than when the capsule is left behind. In the latter operation the capsule becomes more or less opaque—opaque often to an objectionable degree—so that the patient is left in the position of one looking through gauze of varying degrees of density, whereas in the former operation there is nothing left to become opaque, and there is as a consequence clearer vision and no need for after interference. I have been told by a theoretical opponent of this operation that it is best to leave the capsule behind and a year or so afterwards to cut it across. To thus cut the capsule is submitting the patient to two operations instead of one. To cut the capsule across thus is not always an easy proceeding, it is not always a satisfactory proceeding and it is not always a safe proceeding. The very objection to extraction in the capsule is unavoidable in cutting the capsule across afterwards, whereas it is avoidable in the vast majority of cases when the lens is extracted in the capsule by experienced hands—viz, injury to the vitreous.

I see it generally advanced that by doing the ordinary extraction operation with an iridectomy the patient is not near so liable to get iritis, as if an iridectomy were not done—a fact which is generally attributed to the iris not being bruised when the lens is escaping if an iridectomy be done. The existence of the fact concerning the bruising of the iris in the non iridectomy cases being the cause of the sequent iritis I question. The greater frequency of iritis in the non iridectomy cases is due to the greater frequency of lens matter being left behind. It is much easier to remove the last traces of lens matter from an eye in which an iridectomy has been done than from one in which an iridectomy has not been done. The greater the skill the operator has in removing the last traces of lens matter the less iritis he will have. Such is my own personal experience of the ordinary operation. Since I commenced extraction in the capsule, whether with or without an iridectomy, I have hardly seen a single case of iritis in which the accident of the capsule bursting and having to be left behind with a trace of lens matter did not occur. If the iris be bruised in the non iridectomy cases of the ordinary operation, it should be much more so in the non iridectomy cases of extraction in the capsule,

and if iritis, as generally advanced, is due to bruising of the iris in non iridectomy cases, we should have much more iritis in extraction in the capsule without an iridectomy than in the ordinary operation without an iridectomy, but the reverse is the case. I am thus of the opinion that iritis sequent to cataract extraction is almost always due to lens matter which has been left behind, the more manipulative experience the operator has, the less iritis he will have.

The only advantage of an iridectomy in all ordinary cases is that there is much less liability to prolapse of iris and in the capsule scratching operation much less liability to lens matter being left behind with a consequence less liability to iritis.

The risk of escape of a bead of vitreous is, in my opinion, a much smaller drawback to extraction in the capsule than the risk of iritis following lens matter left behind in the ordinary operation, and the risk of having later on to operate on an opaque capsule. I have never seen evil consequences from a slight escape of vitreous. I have often seen evil consequences follow iritis.

Criticisms on extraction in the capsule unless by one who has a liberal experience in this special operation are worthless. They are more theory unsupported by practice.

The statistics in Table I show the results respectively of the operation for extraction in the capsule and for extraction by scratching the capsule and leaving it behind. The table also shows relatively the complications and sequences to which each operation is liable. The groups in this table were, with few exceptions, not selected for the particular operation by taking favourable cases for one operation and unfavourable cases for another. Each group represents the cases done in a particular season as a whole, with the exception of a few cases which I shall deal with later on. The statistics in Table II represent cases selected for the particular operation. The tables largely speak for themselves with the exception of a few points which I shall deal with later on.

The following is a detailed description of the operation I perform for extraction in the capsule.—Assume that the case is a favourable one for this operation and that all antiseptic preliminaries have been gone through, the eye being cocainized, I insert a weak spring speculum. I take a good hold of the conjunctiva in the lower segment. In case I intend not to do an iridectomy I run the knife right across the pupil a little above the centre—I used to run it across the centre, but have with further experience found so large a wound not necessary—entering it and bringing it out at the sclero-corneal junction just as deep as anatomy, and experience teach us will avoid wounding the vessels of the dangerous area and cut out with a sweep half way between a normal pupil and the sclero-corneal junction. By a normal pupil I mean a pupil which is neither contracted nor dilated. I would here point out that the Graefe's knife should be passed well through to the heel. If done so with a sharp knife, there is no occasion for a back and forward saw movement to complete the incision. The prac-

tised hand will thus complete the incision by drawing it back and cutting out at the same time. I find that in cutting out if we use the heel of the knife more than the point, it seems to work better, the heel being the best part of the knife. A back and forward saw movement should, if possible, be avoided, as the knife often rubs the iris and causes the patient to wince which is one of the causes of the iris getting across the edge of the knife. The incision should not be finished in a hurried fashion, as such, by too rapidly lessening the tension of the eye, often causes the patient to wince, when the iris bulges into the wound.

I would here point out to beginner what I consider important. The insertion of the knife and the completion of the incision should be one and continuous. The beginner generally finds that the iris drops across the edge of his knife unpleasantly often and with further experience this accident does not occur. The accident is generally due to following consciously or unconsciously the description given in text-books which would lead one to think that the making of the incision should be done in two steps, first passing the knife, and, second, cutting out. It is between the two steps that the iris falls across the knife. The act should be one and continuous and if so, this accident will seldom occur. Another point of interest to the beginner is that in those cases in which he is using a knife so thin in the point that it tends, when pushing it through the opposite side of the corner, to follow the curve of the sclerotic and, though entering at the right place, to come out too deep, if he on entering the knife in the opposite side of the corner, twist it slightly on its back he will find that it will come out all right. It is not desirable to use such a thin knife, but we often learn that the knife is too thin in the point when it is expedient to finish the incision with it if we can.

The eye is washed out before the incision only, unless in exceptional cases. The agent I use is a 1 in 3000—4000 bichloride of mercury solution which I find has got no drawback. The incision being made, the speculum is taken out and the upper eyelid is hooked up on an ordinary ophthalmic blunt hook by an assistant, who draws down the lower lid by the usual method of placing the face of the thumb on the skin of the face close to the eyelid and drawing it down. He lifts the upper lid well up with the blunt hook and relaxes neither the upper nor the lower lid until the operation is finished. Concerning the use of the blunt hook in this connection, it is important that the assistant should keep the upper lid well lifted up. In the ordinary operation for cataract every one knows that if the speculum is lifted up, he can lessen the pressure on the eye and lessen the tension. This is easily seen after making the incision. With the blunt hook we can control almost absolutely any effort on the part of the patient to squeeze out vitreous. The power of the speculum so used is not sufficient to control the contraction of the orbicularis muscle, and in this operation if we use the speculum, we must take it out after the incision is made. We are almost certain to have an escape of vitreous if

we let the speculum stay in until the lens in its capsule is out. If we do not use the blunt hook or some such instrument, then we must do without any speculum or retractor on account of the liability to escape of vitreous. What causes the escape of vitreous, assuming the operator have a steady hand, is contraction of the orbicularis muscle when the patient winces from nervousness or otherwise. It is not the contraction of the muscles which act on the eyeball proper. This can be demonstrated after the incision is made, if the eyelids be drawn off the eyeball as above described, the tension on the eyeball will be seen to come and go as we relax the tension on the lids or the reverse. I am aware that some extract the lens in the capsule without the aid of any retractor by the use of their unaided fingers. In my experience such a method, leaving the orbicularis muscle too free to act, is unpleasantly often associated with an escape of vitreous. It also leaves the operator in an awkward position if the capsule bursts when the lens is half out, or if vitreous shows itself when the lens is half out. In either case he must desist until an assistant has taken charge of the lids and until he gets the necessary instrument, one of which he would otherwise have in his hand, *viz*, the spoon. To come back to the subject. The assistant having taken charge of the lids, I place the convexity of a blunt hook over the junction of the lower with the middle third of the lens and a spoon above the incision to make counter-pressure. I press the blunt hook down neither towards the wound nor from it, and do not alter its position until the lens is nearly out, all the time making *slow, steady and uninterrupted pressure and counter-pressure*. When the lens is more than half way out, I, while keeping up the tension with the spoon in its original position, shift the blunt hook forward and gently tilt the lens by getting the edge of it in the concavity of the blunt hook. If this manoeuvre be done with the spoon or other comparatively sharp-edged instrument, or with any roughness or jerk, the capsule will give way and lead to a difficulty with which I shall deal later on.

In any form of cataract extraction without iridectomy, I find no advantage in a preliminary instillation of atropine, as once the incision is completed, the pupil contracts to the same position as if no atropine had been used. The pressure should be slow, steady and uninterrupted without jerk or shifting of instruments. This slow, steady strain of the lens on the pupil tires out the muscle of the iris, and the pupil gently and steadily relaxes as the muscle gets tired. In this case it is not a question of bruising the iris. The point is to tire out the muscle of the iris which can only be safely done by doing it slowly. This proceeding also allows time for the lens to become gently dislocated. The operator who attempts to express the lens in its capsule as rapidly as is done when the capsule is scratched will have disastrous results. By over rapid expression the capsule, when the lens is more than half way out, will very often give way and retract with some lens matter, letting the core escape in which case it is difficult to get out the capsule, and

its contained lens matter, the capsule being in part dislocated. The lens being extracted, and if vitreous has made its appearance—it being snipped off and the iris, if prolapsed, being replaced with the end of the blunt hook, a drop of atropine solution is instilled and the lids are let go by the assistant. Some iodoform is powdered over the lids and an antiseptic pad is put on and a figure of 8 bandage applied.

It will be observed that the only washing, sponging or douching I use is a preliminary washing out before the incision is made. After the lens in its capsule comes out if we go "fiddling," we are certain to have an escape of vitreous. The lids on closing are quite sufficient to drive any fluid there may be whether vitreous or other, out of the conjunctival sac. I here except blood. Such clots, as may be, can be picked out with a forceps before the assistant lets go his hold on the lids. Blood should never escape in a cataract operation beyond the very merest trace. If it does escape it is due either to making the wound into the dangerous area or to an iridectomy wound in a glaucomatous eye. Blood does not escape from the wound for an iridectomy in the iris of healthy eye, as is stated in many of the text books beyond the merest trace which can be neglected, or it is due to a corner which is vascular or to the loose conjunctiva at the inner side getting over the point of the knife and getting wound in making the incision. In the case of the glaucomatous eye just mentioned it is such an eye as should not be operated on, the glaucoma is too far advanced for cataract extraction. If the iris bleeds when cut in such cases, the fundus will also bleed if the cataract be extracted. In the case of the vascular corner mentioned such a corner is not in a good enough condition for operation, and it should not be done until the corneal condition improves. In the case of the loose conjunctiva at the inner side getting wound in the assistant should shove it back with a spoon to save it from being wounded. Bleeding from a wound made into the dangerous area needs no comment. The fashionable conjunctival flap operation has the great disadvantage of bleeding. I have enough experience of the conjunctival flap incision to come to the conclusion that it has no advantage over any other incision and that it has the drawback of bleeding at the time of operation.

The operation I perform for extraction in the capsule with an iridectomy differs in no way from the above, except in that the incision is finished just in the cornea close to the sclero corneal junction.

The corneal wound in any form of cataract operation should be sufficiently large to let out the lens without difficulty. I have never regretted having made the wound liberal. I have always regretted having made it pinched. When the wound is made too small, it is exceedingly difficult to enlarge it. The more experience an operator has, the more accurately does he gauge the size of the wound required. The gauging of the size of wound required for the particular case depends on the recognition of the character of the lens to be extracted. I am aware that theoretical objections are raised against the incision I make in my non-iridectomy cases—(a) as to slowness of healing, (b) liability to sepsis, (c) alteration of curvature of the cornea following, (e) liability to sloughing of the cornea, (f) the scar in an awkward position. With regard to such objections I have to say that they are not borne out in practice (*vide* the tables in this article).

Capsule giving way—If the incision be too small, or if the manipulation be not both skilful and gentle, the capsule is certain to give way when the lens is half or two-thirds out,—letting the core escape—and to retract with some lens matter. We have then to deal with the most serious complication of this form of operation. It is in this connection that not having given charge of the lids to an assistant and using the fingers to express the lens shows the weakness of such procedure. There is at this juncture no moment to be lost and no nervousness to be exhibited in the operator. When the core thus escapes, it with the blunt hook in our right hand, we take off the pressure, the capsule will certainly retract completely and fetch some lens matter with it. The capsule is dislocated in part. The operator should keep up sufficient pressure with the blunt hook in his right hand to just prevent the capsule retracting, lay down the spoon he has in his left hand and lift a good ordinary dissecting forceps and catch the capsule which is hanging out of the wound in part and fetch it with him. He will, as a matter of course, fetch its contained lens matter. A dissecting forceps is by far the best instrument for this purpose as it takes such a broad, gentle, good hold of the capsule that it does not tear it as many of the æsthetic instruments will do. The practised hand will seldom fail in this manœuvre, and in this respect practice has a meaning which cannot be over-estimated. If from any cause the capsule retracts within the wound, we may try a little gentle coaxing to get out the trace of lens matter it contains, and if the capsule be very evident to the eye, we may make an attempt to catch it with an iris forceps and fetch it out. If we cannot do this by one or two careful attempts, we should desist and watch events. In any case we should remember that the capsule is dislocated in part, and that any undue or rough attempts to get out the trace of lens matter or capsule will result in mixing up lens matter with vitreous, which will certainly be followed by inflammation of the vitreous and loss of the use of the eye. If the capsule be left, it will, if in large part dislocated, retract out of the line of vision, if in a small part, it in any case becomes opaque due to the dislocation, and we can later on make an iridectomy-sized wound and reach in an iris forceps and fetch out the opaque capsule with very little difficulty.

Escape of vitreous—Escape of vitreous so much dreaded by the novice, though not a desirable thing, I have very seldom seen evil consequences from. Cases in which there has been an escape of vitreous seem to do just as well as other cases if the escape do not exceed about one-third. The vitreous seems to repair just as well as any other tissue in the body, and why should it not? The place of the escaped vitreous is taken by aqueous tumour and the tension of the eye-ball

does not seem to suffer unless the escape be very considerable.

The cases of escape noted in the table in this article are, with very few exceptions, the escape merely of a bead of vitreous. They also include twelve cases in Table I and sixteen cases in Table II of intentional evacuation of a bead of vitreous, in which the iris was being bulged out by the pressure of the vitreous before bridging up as otherwise I would have had to do an iridectomy which in itself is often not enough to control the condition.

The bulging of vitreous into the wound will prevent it from healing up just as effectually as a prolapse of iris. These cases all did well and the iris assumed its proper position. To do this I hit a cataract knife and pick a point of the prominent vitreous and with the blunt hook press out a bead and snip it off. You can press out just what you wish under these circumstances. A circumstance connected with escape of vitreous as shown in the tables may also be noted.

The statistics include 69 cases of extraction of lenses couched by *rawul* or pioneer of cataract operators. In these cases I always do an iridectomy and have very often to lift out the lens on a spoon, and in such cases there occur an escape of vitreous very frequently. *Rawuls* are very numerous in this part of the Punjab and do no end of harm to eyes. If the patient comes to me while his eye is otherwise sound, I never hesitate to extract his dislocated lens, and the results are very satisfactory. Under the head of extraction by scratching the capsule in Table I, I at that time included all cases—those dislocated—by the *rawul* as well as others, and under the head of extraction by scratching the capsule in both tables are included all cases of soft cataract in children, cases which are very often associated with an opaque capsule. I now extract all soft cataracts in children. A very small wound is all that is necessary. When the capsule of soft cataract is scratched its milky or gelatinous contents are expressed with ease. In such cases I take out at the time the capsule if opaque, and when such opaque capsule is taken out, an escape of a bead of vitreous is very frequent. I prefer to remove the capsule in such cases when opaque even at the sacrifice of a drop of vitreous. These cases explain a considerable number of cases of escape of vitreous* as shown in the tables in the scratch ing operation.

Vitreous making its appearance behind the lens when it is half a way out—

This is a complication which occasionally occurs, and it is due to the capsule being more than usually strongly anchored in part and refusing to give way. The moment, a clear point—

* A well known ophthalmic surgeon in this Province has given me the following note which is of considerable interest on escape of vitreous—"The strength of vision of A. B., who was operated on for cataract on both eyes under chloroform in 1884, is with a plus 11D lens for each eye 15 feet type, at 11 feet with the right eye, at 10 feet with the left eye, at 13 to 14 feet with both eyes. At the time of operation on his right eye he had a violent fit of coughing which led to a large escape of vitreous, and as it was considered that he had little or no prospect of vision in that eye from the extensive nature of the escape, the left eye was operated on at the same time. It is now seventeen years since the operation was performed, and he is now 75 years of age."

vitreous—appears behind the lens when it is being expressed, the spoon in the left hand which has been making counter-pressure should be lifted—, the blunt hook in the right hand keeping the lens in position and the spoon should be shoved beneath the lens through the clear point and the lens lifted out on it. This is in practice an easy proceeding. Once vitreous makes its appearance behind the lens if we go on pressing, we will only press out vitreous.

Bursting of the capsule—With regard to bursting of the capsule, in expressing the lens in its capsule, we can by experience fairly guess a capsule which will give way, and in such case we scratch the capsule and leave it behind. The case in which the capsule is likely to give way is of a bluish colour not unlike a mixture of two thirds British skim milk and one-third water. I cannot ascribe it more accurately, once seen and pointed out they are easily recognised afterwards.

To sum up the **advantages of extraction in the capsule**. It is as simple in experienced hands as the ordinary operation. It has the great advantage of leaving nothing behind to become opaque. It requires no after-operation for an opaque capsule. It gives clearer vision than when the capsule is left behind. It leaves no foreign matter to set up iritis. It requires no instruments to be inserted into the eye to remove lens matter. It implies the minimum of manipulation, and, as a consequence, the minimum of injury to the epithelium of the cornea. Its drawback, as compared with the ordinary operation, is a little greater liability to escape of vitreous, assuming that the manipulator is experienced. The more experience one has, the more one sees that the less douching—introduction of instrument, into the interior of the eye, general manipulation, in a word "fiddling"—the operator adopts the better are his results. I may also say that I agree with Colonel Geoffrey Hall, I.M.S., where he says, in his invaluable little pamphlet on cataract, that eyes going wrong after operation "can nearly always be traced to something which went wrong at the operation," and also where he says "the more cataract operations one performs, the more one is impressed with the fact that one improves as one goes on, and yet I might almost say perfection is never reached."

I have been told that it is impossible to do such an amount of work and to do it scientifically. I may here give a brief statement concerning the work of this hospital and of the staff. It is the charitable hospital supported by a non-commercial municipality of about 55,000 population, at a cost of about Rs. 8,000 a year which includes is every thing, except the pay of the Commissioned Officer. The staff consists of a Commissioned Medical Officer, a first grade Assistant Surgeon, a Hospital Assistant, four dressers and a few apprentice dressers, a midwife and a matron, with a menial staff.

It is a general surgical hospital with a large out door attendance. General surgery goes on the year round and we have seven operating days in the week. In matters ophthalmic, we have two throng seasons in the year which the patients make—they are not our arrangement, the first season is from the commencement of the mild weather about the middle of February till the middle of April when it commences to get hot, and when the wheat harvests come on at which latter time sick attendants to accompany patients cannot be spared. The second season commences about the 20th of September and ends about the 1st of December. This latter season commences as soon as the hot weather is ceasing to become oppressive and ends when the cold season is right on. In the intervening period we also do cataract operations when they come for operation, but the general seasons selected by the mass of the patients are the best seasons of the year from a climatic point of view. It will thus be understood that our cataract operating seasons are really throng. It will be better understood when I say that I operated on 688 cataracts in the recent month of March, a month in which I had thirty one operating days and in which I did 41 cataracts on each of two days. In our throng season the day the cases come in they are operated on, none being left over for the following day.

I do all the cataract operations myself except when I am absent on other duty when my Assistant-Surgeon does a few. The Assistant-Surgeon puts each of his dressers to a section and supervises the dressing bringing to my notice only complications. The Hospital Assistant in the throng season looks after the out-door. When I have finished with the Jail of which I am Superintendent and finished with the Civil Surgeon's office and seen the complications, my dresser who assists at cataract operations and who is my chloroformist as well is ready to assist me. The cases are then selected and sent into the operating room, ophthalmic and other, and we go to work until we have finished. I see the cases, almost all, when leaving hospital. At both ends of our throng season I have ample time to examine the cases leaving hospital as regards refraction, but in the throngest times spectacles are fitted by one of the dressers who can do it very well. Ophthalmoscopic work I leave over until late in the evening, and a considerable amount of it we have.

We see it commonly advanced that our results to be of any scientific use should be followed up for years afterwards. This is the great argument of those who have little experience. I find that if we don't follow up our cases, that our unsatisfactory results are certain to follow us up, we are certain in this country to see them much oftener than we care to, and from what I have seen I can say that cases which leave hospital well remain so. Again, let those who talk so point me to a single instance in which an ophthalmic surgeon has published a series of cases after having followed up the results for years. I have often been on the look-out for such a series. If such series really exist, they should be published and not, as now, go to the grave with the operator.

THE EXTRACTION OF CATARACT IN THE KASHMIR MISSION HOSPITAL, WITH AN ANALYSIS OF RESULTS AND REMARKS

By ERNEST F NEVE, M.D., F.R.C.S.

1.—General Results

THE total number of cases under review is one thousand. The following table shows the general results —

Period	Cured or improved	Not improved	Left hospital, result unknown	Per cent. failure
1882-1890	211	20	6	8½
1890-1899	629	24	10	4
1899-1900	96	2	—	2
Total	936	46	16	4½

In 82 per cent of the whole the result was good, while 11 per cent were improved. As far as I can ascertain, between 70 and 75 per cent were first-class. In Kashmir where the majority of patients is illiterate, the results are tested by finger counting. The vision is registered as good if, with the aid of + 8 D, the patient can promptly count fingers at a distance of 20 to 30 feet. Less than 6 feet is reckoned poor and between 6 and 20 feet sight. The examination is usually made a fortnight or three weeks after operation, and this is too soon for the application of a severer test.

The ignorance and obstinacy of many patients shown in deliberately pulling off their bandages and perpetrating all sorts of wild irregularities constitute a serious bar to the attainment of the highest degree of success. When they have recovered their sight, patients are anxious to leave hospital at once. And it is impossible to follow up most of the cases, so that in estimating results, it must be remembered that many who three or four weeks after operation have but poor vision, continue to improve, while, on the other hand, the number of those who having good sight already, within a month of operation, lose it subsequently, would be extremely small.

These returns are based on notes made at the time of operation and during the after-treatment by the operator himself. In my opinion no one but the operator is competent to accurately describe the extraction, and no one else is likely to enter up the subsequent progress, especially if there are inflammatory sequels, with any degree of exactitude. This is a point of great importance in all cataract statistics. In 711 cases, my analysis is based upon the in-patient case sheets, which hang at the bedside and contain an account of the operation, progress and results. The remaining 289 cases were obtained from the register of operations.

About 80 of the extractions were performed by various visitors, amongst whom the largest share fell to Dr W F Adams, who kindly acted on two occasions during the absence of one of the staff on furlough. Of the other 920 operations about one-half were done by Dr Arthur Neve and one-half by the writer.

2—Varieties, Age, Sex, Race, and Climate

Variety of Cataract—Hard senile, 88 7%, hard and soft, 4%, soft, 3%, diabetic, 1 3%, posterior polar, 0 6%, congenital, 0 3%, glaucomatous, 0 4%, traumatic, 1 7%.

The comparatively high age (our average is 50) indicates clearly that the opacity is usually a senile change. The oldest patient was 80 and made an excellent recovery. About 30% of the operations were on females, who probably owe their partial immunity to a smaller degree of exposure to strong light.

The population of Kashmir territory consists of Mahomedan and Hindu in the proportion of about 10 to 1. Cataract is both relatively and actually far more common amongst the former, who are also considerably more exposed to climatic influences. The Hindus and Sikhs do very little field work and are mostly dwellers in cities, being shopkeepers, clerks, etc. Among the Lama-Buddhist and Mahomedan inhabitants of Ladakh and Baltistan the disease is relatively common. In the former place I once did 11 operations in one day.

In the valley of Kashmir the staple food is rice taken with milk, meat, vegetables, etc. A small quantity of wheat is consumed, chiefly as bread. In Baltistan and Ladakh, wheat and barley are largely consumed and practically no rice. The relative frequency of cataract in these districts is, however, in my opinion, not due to the diet, but to the dry climate which favours the presence of large tracts of desert, from which the sun's rays are powerfully reflected. The absence of atmospheric moisture makes the air peculiarly clear and the light very bright.

3—Influence of Disease, general and local

Cataract patients usually enjoy good general health. Rickets and albuminuria are both distinctly rare in Kashmir and, when occurring, are usually found under conditions of darkness and damp, which are, I believe, as a rule antagonistic to the formation of cataract. Diabetes is very rightly considered a contraindication to operations in general surgery. Curiously enough, diabetic cataract is an exception to the rule, and may be usually quite safely extracted. In 13 cases we have had no failure. Far more important is the local condition of the eye. The existence of Glaucoma, previous Iritis or any form of Conjunctivitis, Dacryo cystitis, Ectropium or Entropium may be fatal to success owing

to tension, occluding iritis or septic infection of the eye through the incision. Extreme degrees should be considered prohibitive. But, as a general rule, except in the first two, appropriate preparatory measures suffice to reduce the risk to the point at which it becomes admissible to operate. In this way, although the percentage of failure rises, many patients receive sight, who might otherwise have been refused and left in a state of hopeless blindness. In eight cases of increased tension, four of which were distinctly glaucomatous, there was one failure and four cases of poor vision. Fifteen cases showed signs of previous iritis. Two of these were not improved, in six the result was poor and in six fair. Only one case was really satisfactory, and in this a preliminary iridectomy was done, which fortunately secured a wide coloboma. Ten days later the lens was successfully extracted. In posterior polar cataract the probabilities of deep-seated disease are present. Of six cases, in one the result was good, three poor, and in two there was no improvement in sight. Traumatic cataract gives poor operative results. The iris is often bruised and lacerated, and occlusion of the pupil is prone to follow. Of seventeen cases five were not improved, in five the result was poor and in seven fair.

In 221 cases the conjunctival sac was unhealthy being injected, or with watery or gummy discharge. After preliminary treatment these were subjected to operation. There were ten failures, in 38 cases the result was fair and in 19 poor. In 40 cases of trachoma, the result in seven instances was fair, in five poor, and there were two failures. Increasing care in the preparatory treatment of these cases has steadily reduced our failures. Thus in our last 192 cases, out of 91 cases of conjunctivitis and 5 of trachoma, there was only one failure.

4—Immaturity

We have had no experience in the artificial maturation of cataract. An operation, followed by a rapid decrease in vision would, I am afraid, not be at all approved of by the average Kashmiri patient. Cases of incipient cataract are told to return when they can no longer count fingers. Where the vision is already very imperfect although the cataract is still immature, there is some danger that the patient's confidence will be shaken if the operation is too long deferred. In cases of bilateral cataract, however, if one side was mature, that side was operated upon and the patient instructed to return at a later period for the second operation—the promise of a pair of cataract spectacles facilitating the arrangement.

5.—Preparation of Eye and Antiseptics

One of the greatest dangers in eye surgery is that of overlooking some septic condition of the eye. Nothing reduces this danger more

than the rule of subjecting eyes to several days' preparation. Of our last 211 cases no fewer than 173 have been treated in this way for a period of one to three weeks. Usually nitrate of silver, 10 grs to 1 oz, or sulphate of zinc, 3 grs to 1 oz, are used for a few days, followed, when the eye is quite healthy, by boracic lotion 5% solution, with which also at the time of operation the eye is very thoroughly syringed. No eye should be considered fit for extraction of the lens as long as there is any discharge whatever. The cleansing of eyelids, eyelashes and the neighbouring skin is important. This I usually effect by rubbing with a swab of cyanide gauze wrung nearly dry after dipping in 5% carbolic solution. Great care must be taken to prevent any lotion passing through the palpebral aperture. If the patient is told to firmly shut the eyes this is obviated.

In operating it is most important that everything should be aseptic. For the first 530 cases our routine was to place all instruments in 5% carbolic lotion and transfer them immediately before use to a saturated solution of boracic acid. Since then we have boiled all instruments except the knife and tortoise-shell spoon, which are placed as before in carbolic lotion and transferred together with all the other instruments to boracic solution at the time of operation. Atropine and eserine lotions are prepared with 1—6000 perchloride of mercury lotion. The cocaine solution is freshly prepared for each case. With a sterilized glass medicine dropper 5 minims of 5% boracic lotion are placed in a tiny glass mortar and to this $\frac{1}{4}$ gr cocaine is added with a sterilized metal spoon, which is rotated in the fluid until solution is complete.

The surgeon's hands are carefully cleansed and the extraction is done in a room from which all septic cases, whether ophthalmic or general, are always excluded and which is free of dust. By these precautions the danger of septic inoculations from without is averted. While by the preparatory treatment of the eye, auto-infection is provided against.

6—Use of Atropine and Eserine

For diagnostic purposes atropine is sometimes used to ascertain maturity or the presence and extent of iritic adhesions. I never employ it at or soon before extraction. The routine use of atropine at the time of operation, whether before or after, is, I consider, bad practice. During the after-treatment, the presence of iritis or of swollen cortex impinging on the iris, occasionally requires its use. Eserine is on quite a different platform, and is often useful after extraction in guarding against prolapse of the iris and adhesions and in counteracting the mydriatic effect of cocaine. In the absence of iridectomy, however, eserine does not at all necessarily avert prolapse.

7—Dressings

Sal-alembroth wool and for the deep dressing double cyanide gauze are used. One eye only is bandaged and for this a $2\frac{1}{2}$ -inch "Red cross B & B" bandage is used. The eye is usually kept bandaged for 12 days. The average time spent in hospital is 20 days for each case.

8—Irrigation

Intra-ocular irrigation is a procedure of value in the treatment of cases in which the cortex, whether from immaturity or for some other reason, cannot be easily removed by ordinary methods. Our attention was first drawn to the subject by a paper of McKeown. The apparatus which we use is extremely simple—a glass funnel, India-rubber tubing, and the metal nozzle and glass tube of a suction curette. Boiled filtered water is used, and the requisite force of current can be obtained by elevating or depressing the funnel. The nozzle is inserted just sufficiently far to secure the formation of a current throughout the anterior chamber. The way in which sticky adherent cortex can be visibly washed out is instructive. Extra-ocular irrigation is also of great value, and is often so effective as to render the introduction of a nozzle into the anterior chamber unnecessary. If water or boracic lotion is syringed with moderate force and at a suitable angle against the site of the section, the lips of the wound separate and cortical matter can be gently washed out. Small masses, previously unsuspected, often come into sight and escape from the wound in the current thus set up.

9—The Operation of Extraction

With regard to the actual operation of extraction the following points may be noted (1) the incision, (2) iridectomy, (3) capsulotomy, (4) accidents, (5) inflammatory sequelæ.

1 *Incision*—In our last 711 cases, 557 were modified linear Von Graefe, 141 were modified flap, 10 were downwards and 3 lateral. There can be no doubt that if too peripheral there is danger of vitreous loss. There is a zone just within the corneo-sclerotic margin where there is an increased risk of prolapse of the iris. If the incision is still lower down, the lens has to be rotated, thereby slightly increasing the difficulty of delivery, but prolapse of the iris is rare. Corneal astigmatism may, however, result.

2 *Iridectomy*—Of 711 cases, no iridectomy was done in 175. In 14 of these prolapse of the iris occurred subsequently and in 15 others iritis occurred, followed in six cases by total and in three cases by partial occlusion of the pupil. Certainly not more than 25% presented eventually a really central pupil—this fact being due to the mooring of the base of the iris to the back of the corneal wound and subsequent slight contraction on healing. When iridectomy is omitted there can be no certainty that you

will not find the iris prolapsed on the occasion of the first dressing. The danger, too, of subsequent glaucoma is no doubt somewhat greater. It is a pity that these objections exist to an operation which in other respects is ideal and often does give gratifying results.

3 *Capsulotomy*—The names of Pagenstecher and Macnamara have long been associated with the extraction of the lens in its capsule. More recently Mulroney and others have advocated extraction without iridectomy or the use of the scoop, by a rather large semi-lunar incision below. The amount of force required and the large size of the incision appear the chief objections. I should expect the loss of vitreous to be more frequent. Our experience has not been favourable to the omission of capsulotomy. Of 25 cases, there was a vitreous show in no less than 9.

4 *Accidents*—To a large extent these are under the control of the operator, and it is their elimination which constitutes operative skill. Unfortunately the patients by undue straining, sudden movements and disregard of instructions, may render the utmost care unavailing. In unsteady patients it is no doubt better to abandon cocaine and give chloroform at once. Sometimes a patient, previously perfectly quiet, gives a sudden violent jerk to the head. In one such case, during the iridectomy the whole of the iris came away. In two others, part of the iris was detached and in three more some laceration occurred. In about one per cent of the cases there was sharp hæmorrhage into the anterior chamber. In 62 out of a total of 711 there was vitreous show or loss. Nine of these were extractions in the capsule. The majority were due to straining of the patient or involuntary spasm of the ocular muscles. It is doubtless undesirable to spend much time over the toilet as sometimes at the end of a careful but too prolonged attempt to clear out some clinging cortex, the vitreous appears. The omission of iridectomy decidedly diminishes the risk of vitreous loss, but unfortunately the danger of prolapse of the iris increases *pro passu*.

5 *Inflammatory sequelæ*—It is difficult to obtain a complete list of these. I fear many cases of slight iritis, adhesions to the cicatrix, etc., have escaped record in our notes. In our last 711 cases, of which alone I have a sufficient account, I find that there have been five cases of panophthalmitis, six of septic infiltration or sloughing of the cornea, and 83 in which there was some iritis. In 16 cases there was total occlusion of the pupil and in six cases partial occlusion. In our last 100 cases we had only one failure from inflammatory causes.

10—Summary

(1) Careful selection of cases and close attention to antiseptics are the two most important factors of success. (2) In the interest of patients

the former must not be carried too far, for although previous uitis has a particularly prejudicial effect, many eyes, with conjunctivitis or trachoma, can be safely operated upon after preliminary antiseptic and astringent treatment for days or weeks (3) The omission of iridectomy, while producing excellent results in the majority of cases, does nevertheless increase the risk of prolapse of the iris, occlusion and glaucoma On the other hand, it diminishes the danger of vitreous loss (4) Extraction of the lens in its capsule increases the risk of vitreous loss and necessitates a larger incision, with a *priori* greater danger of impairment of corneal nutrition and sloughing (5) The presence of posterior capsule is a less evil It is often transparent and, if not, can be easily needled (6) Therefore, as a general rule, Von Graefe's linear extraction with iridectomy is the most suitable and gives the best average immediate and subsequent results

SOME PRACTICAL POINTS IN CATARACT EXTRACTION

By W J WANLESS, M D (N Y)

In charge, American Presbyterian Mission Hospital,
Muzaj, Western India

THE writer's experience in cataract extraction extends over a period of twelve years His total extractions number 495, of which 266 were done during the year 1900 The number of operations is small compared with the experience of many surgeons in India, still the number is sufficiently large to afford, if carefully studied, some valuable instruction as to the operation itself in general, and as to some of the more important details in particular

The necessity of rigidly observing every minute detail of the operation becomes increasingly apparent as one is able to extend his experience on this line of work so common to most in every part of India What the writer has to offer on "practical points" is the result of carefully kept notes and study of his cases

1 *The preparation of the patient*—Of necessity most cataract patients are operated on in Indian hospitals on the day of, or the day following, admission At least this is true in the mofussil Fortunately in the country few cataractous eyes require treatment preliminary to operation, provided the cataracts are sufficiently mature It should go without saying that eyes in which a chronic discharge, congestion, ulceration, entropion exists suitable preliminary treatment should be employed before operation for removal of cataract is undertaken For chronic hyperæmias of both conjunctiva and cornea accompanied by a discharge probably nothing will be found more serviceable in the preparation of the patient

than a two to four per cent solution of protargol instilled into the eye three or four times a day, accompanied by a moist dressing of bichloride of mercury 1 in 2000 to 4000 Pterygium if small may be left alone, if extending more than four lines over the cornea it should be previously removed When removal is undertaken, the wound should be allowed to thoroughly cicatrize before the larger operation is attempted

The preliminary use of a mydriatic in clean eyes, except the instillation of a single drop of a two-grain solution for the purpose of examination of the lens, we have not found necessary

Given a clean eye with active pupil, and normal tension and light perception, there is no reason why the patient may not be operated on immediately after admission, provided, of course, the patient is clean and has clean clothing and bedding The majority of our patients in the Miraj Hospital are operated on during the day of admission and we have no reason to regret the practice Before the patient goes on the table his face should have been thoroughly washed with soap and water followed by a wash of bichloride of mercury 1 in 2000 The patient having been put on the table, facing if possible a good north light, and the surgeon and his assistant having sterilized their hands as for any major operation, the patient's face is further cleansed by the surgeon or his assistant by the use of pledgets of cotton taken from a 1 in 1000 bichloride solution

2 *Sterilization of instruments*—Nothing is so efficient as boiling All instruments with the exception of knives and bone-handled instruments should be boiled in a 5 per cent carbonate of soda solution for ten minutes, knives and bone or ivory-handled instruments are best sterilized by placing them for eight minutes in strong carbolic acid The instruments may be taken from the boiler and carbolic acid with sterile forceps, placed in 5 per cent warm carbolic solution from which they are taken by sterile hands, wiped dry and placed in a previously sterilized porcelain tray ready for use

A sharp knife is a *sine qua non* if a clean wound is to be made As a rule, a knife should not be used to make more than two incisions without re-sharpening An Arkansas oil-stone is the best hone The writer always sharpens his own knives immediately before sterilizing his hands

3 *Anæsthesia*—Chloroform is used only in the needling of congenital cataracts in children, and in extremely nervous adults To cocaineize, the plan we have found to give uniformly the best results, is the use of a 4 per cent solution of cocaine freshly prepared and dropped into the eye every 4 minutes by the watch until 4 drops have been used The cocaine should be allowed to fall directly over the upper half of the cornea and a single drop at a time We have not found it necessary to sterilize the cocaine solution by boiling By the use of five drops of a 5 per cent solution of carbolic acid added to half an ounce of the cocaine solution, it may be kept for two weeks without appreciable deterioration Of course, the glass stoppered bottle containing the cocaine solution should have been previously sterilized by boiling

4 *Sterilization of the conjunctival sac*—Two minutes after the instillation of the fourth drop of

cocaine the speculum is introduced and partly opened. The most satisfactory speculum is a simple one with a strong spring and simple hook or screw device for controlling the expansion. It should have a sufficient bend to keep its extremity clear of knife and should be easy to grasp. The writer has known serious injury result from the slipping of the speculum on a surgeon's hand. He has also known a patient to screw up his lids and shoot out the speculum where the instrument was not sufficiently firm in the blades. Having introduced the speculum, the eye should now be showily irrigated with 1 in 4000 bichloride solution from a small rubber syringe kept in the solution and used solely for this purpose. Following this the conjunctival sac should be further irrigated with half a pint of a saturated boric acid solution. This is best done by a nurse or student from a glass fountain irrigator having a clamp to control the current and placed about two feet above the patient's head, a glass nozzle being used.

The surgeon meanwhile mops the inner canthus with a small cotton sponge and removes any shreds of mucus which may adhere to the speculum or lids. Frequently it is necessary to remove the speculum to accomplish this as the shreds sometimes adhere beneath the blade of the instrument. The stream of water should be made to play well beneath the upper lid and over the inner canthus.

5 *The incision*—This we find is best made with the speculum *in situ*. In subsequent steps a lid retractor replaces the speculum and is held by an assistant who, with the thumb of the other hand, draws down the lower lid. As to the kind of incision, we find it does not make any very particular difference which incision is employed provided it is free enough. On the whole, however, we prefer the flap incision made with a Graefe knife in the sclero-corneal limbus immediately in front of the vascular zone cutting straight up in this line and ending with a backward movement when the conjunctiva is reached sufficient to secure a conjunctival flap of about two lines in width. The bleeding from a conjunctival flap of this size is practically nil. Even if there is some bleeding from the conjunctiva, it is quickly checked by gentle compression from a moist boric sponge. In most cases it quickly stops spontaneously.

The advantage of the conjunctival flap is that it secures prompt adhesion of the wound, thus preventing infection and prolapse of iris. Astigmatism too, we believe, is less after this incision than when the incision is used which begins and ends in the cornea. In making the incision the conjunctiva is widely grasped with the fixation forceps a little to the outer side of the median line of the eyeball. The puncture is made in the limbus one line above the horizontal meridian and the counter-puncture at the same opposite point. If a pterygium exists (occasionally one is obliged to be operated when it does) the puncture is made a line or more below the horizontal meridian and the counter-puncture several lines above it on the opposite side according to the size of the pterygium.

6 *The removal of the lens*—There can be no doubt but that the removal of the lens in its capsule without an iridectomy is the

ideal operation. However, since this operation is one which requires more patience and delicate manipulation in its performance, we believe that until one has had considerable experience with the older operation of iridectomy and capsulotomy, he had better not make this operation the one of election. Our experience with the former operation is that healing is generally more smooth and the visual result on the whole better than when an iridectomy is done and the capsule ruptured. An accident sometimes occurs in the performance of this operation which I have not seen mentioned elsewhere, and that is the rupture of the capsule when the lens is about to escape through or is all out through the wound.

It may occur even when a liberal incision has been made and when the lens has not been directly touched by an instrument. It occurs generally in what G. Hall calls "semi fluid" cataracts.

Fortunately, however, it is usually an easy matter to grasp the remaining capsule with an iris forceps and deliver it together with the pieces of cortex which sometimes remain also. If vitreous escapes when this accident occurs and one is obliged to leave the capsule and pieces of cortex, iritis is likely to ensue, though good vision may in the end be secured. In this or similar accidents, in cataract extraction, too much manipulation in order to correct matters is to be greatly deprecated as resulting in much more harm than good. If the capsule is not readily caught with the first or second introduction of the iris forceps an iridectomy should be done and the rest left to nature.

If, owing to the small size of the cornea or for other reason the incision is small, we think it best to do a preliminary iridectomy, and if undue pressure is required to start the lens from its position, the capsule should be pricked and the cataract removed by the older method. Enlarging of the incision after it has been made, is very unsatisfactory and ought always to be avoided, if possible.

The most suitable cataracts for this operation, as it seems to us, are the morgagnian, hard, and hypermature cataracts, though we now generally employ it for all except soft cataracts which we remove through a small linear incision at one sitting by irrigation and suction. Congenital cataracts are needled. If circumstances demand it, we do not hesitate to remove immature cataracts. The attempt to hasten the ripening of immature cataracts is likely to result in more harm than the removal of the lens in its capsule.

With regard to the loss of vitreous—We believe with Henry Smith, of Jullundur, that when the lens is removed in its capsule, the loss of a few drops is of no consequence. We have found too that the voluntary loss of a drop or two of vitreous is often in itself a good thing in that it permits the bulging iris to recede and contract. The loss of vitreous with retained cortex and

capsule is, however, a very different matter, and is likely to lead to inferior healing

We have found that when there is a tendency to prolapse of the iris, a fine stream of boric lotion directed from the fine metal nozzle of a small rubber spring upon the cut surface of the wound will invariably cause the prompt contraction of the iris

7 *The question of mydriatics and myotics in cataract extraction*—We believe the instillation of a single drop of a half per cent solution of atropine a few hours before the operation for the purpose of more accurately determining the nature of the cataract and the degree of ripeness to be good practice

If an iridectomy has been done, we also believe it good practice to instil a one per cent solution of atropine before the dressing is applied. If simple extraction has been performed, we think the instillation of a drop of a half per cent solution of eserine helps to keep the pupil contracted thus preventing its incarceration in the wound

8 *The dressing and subsequent treatment*—After using various dressings the one we prefer is a sterilized absorbent cotton compress between two layers of lint and smeared with white boric ointment on which a little iodoform has been dusted. The compress is held in place by a roller gauze bandage. The ointment prevents agglutination of the lids and the consequent accumulation of tears within them. This dressing is removed in twenty-four hours, the lower lid drawn down, and the conjunctiva irrigated with boric lotion without disturbing the upper lid, the same dressing is reapplied for two days, after which a dry sterile compress is used for

four or five days longer when an eye-shade replaces the compress

Both eyes are always bandaged after operation

9 *The removal of both lenses at one sitting in case of double cataracts*—If both cataracts are mature and the eyes free of discharge and inflammation, we do not hesitate to remove both lenses at one sitting. We have done this for several years and have no occasion to regret the practice. For a beginner, however, we do not recommend the simultaneous removal of both cataracts

10 *Nervous phenomena*—Occasionally one finds that an eye operation, especially cataract extraction, results in profound nervous excitement, amounting at times to temporary dementia. A few years ago a patient upon whom we had operated, removing both lenses and in which there was practically no reaction, on the fourth day became very restless, and before the gravity of his trouble was realized, jumped from a second storey window of the hospital destroying his life. Some months ago another patient, a woman, ordinarily of quiet disposition who had had a cataract removed on the evening of the operation, became violent and abusive, but was promptly quieted by a full dose of chloral and after which no further excitement occurred. In the *Philadelphia Medical Journal*, September 15th, 1900, a number of cases of this kind are reported. About all the treatment that seems necessary is the free use of cerebral sedatives until the symptoms subside which they usually do in a few hours

OPHTHALMIC NOTES FROM MOZUFFERPUR

By C R M GREEN, F R C S,

MAJOR, I M S,

Civil Surgeon

Total No of operations	Cured	Percentage of success	SEX		CASTE		AGE.			
			Male	Female	Mahomedan	Hindu	Below 20 years	20 and under 40	40 & under 60 years	60 years & upwards
425	312	71.06	301	124		328		68	278	79

Senile Cataract—The usual form of cataract is the so-called "Senile." Many cases present themselves with mixed senile and secondary cataracts, the cataract developing secondary to disease of the vitreous and glaucoma. The glaucoma is most frequently due to the cataract in the patient's other eye having been "**couched**" by some native quack. Some of these secondary cataracts, where there is good perception of light, are operated on, and a proportion get good vision, but the percentage of successful results in removing cataract is decreased by operating in these cases. This "**couching**" for cataract is unfortunately very common in the

district, and the number of eyes made hopelessly blind thereby is terribly large

I never go to an out-dispensary to operate on cataract patients, but that at least half the applicants for treatment have had their eyes couched for cataract. The eyes seen are in every stage of secondary glaucoma, from general panophthalmia to eyes of stony hardness and with no perception of light, to phthisis bulbi and complete wasting of the eye. It may be said that villagers would not allow couchers to operate on their eyes if the operation for cataract in the hospitals of the district was in repute and popular. This is not so, for the

Behar is far removed from that degree of intelligence that Captain H Smith, I.M.S., ascribes to the Punjabi cultivator. * Over and over again, here in Behar, I have examined a man with commencing cataract, and advised him to wait a few months and come again for operation, at the same time ordering his name and address to be taken. After a few months I have found that the man has had his eye "couched." In the same way if he is not operated on at once he thinks operation is refused. Another reason for the coucher getting patients is that he comes to a village and gathers a crowd, in the usual quack style, and operates on a villager with cataract. The man sees immediately, and all with any defect of vision then come forward to be cured. The subsequent loss of vision of those operated on is known only to the friends of the patient, and even by them is not always put down to the couching. Then occasionally, no doubt, vision is not lost after couching in a very tolerant eye. Personally I have only seen one such case.

The staple diet of the district is rice. The pulses and *kesari dal* are largely used by the lower orders. Diabetes is common among clerks but not common among the cultivators who suffer largely from cataract.

The simple operation, without iridectomy, a $\frac{3}{4}$ " of the upper segment of the cornea forming the flap is the operation I adopt. The capsule is usually lacerated, although in hard ripe cataracts, I do not think it makes much difference as the capsule comes away with the cataract. In fluid Morgagnian cataract I think it is much better not to lacerate the capsule. If the capsule is not lacerated the little bag containing the nucleus and milky fluid is easily delivered, and a clear black pupil left. The capsule is always more or less opaque in these fluid cataracts.

Recently I have used Captain H Smith's suggestion,† of using lid retractors in such an eye, or when the patient is unruly, instead of spring-lid elevators with great advantage. More room to use the knife in making the flap is obtained by this method.

Asepsis and Antisepsis—All the instruments (except the knife, which I disinfect in a bottle of pure carbolic acid and then put in boracic lotion) are sterilized and then placed in a dish of carbolic lotion 1:20. Before use they are dipped in Boric lotion (4 gr to 3i). The eyebrows and lids are cleansed with carbolic 1—20. The conjunctival sac is syringed out with the boracic lotion. Absorbent boracic cotton wool is used for swabs. The eye is dressed with the light pad of absorbent wool. Both eyes are bandaged. The bandage is not removed until the fifth day unless there has been pain. After that the dressing is changed daily. On the eighth day a green shade is given.

Anæsthetic—*Atropine* (gr iv to 5i) is instilled into the eye on the day of operation. At the operation cocaine (gr xvi to 5i) is used practically always.

Complications—Most complications occur from the stupidity of the patient, or from the operation being performed on diseased eyes, that furnish some hope of success. I operate on many anæmic, debilitated subjects, on whom it would be far better to operate when they were

in a better state of health. When, however, there is no prospect of their health being improved, one has to operate. The patients will not stay in hospital long enough to allow of their being fed up and their health improved, while if you let them go away, their condition is miserable in the extreme, as they are suffering from want of proper nourishment from the failure of their vision, depriving them of the means of making a livelihood, and they will surely get a coucher to operate on them. Many of these cases do very well.

The stupidity of the patient at and after the operation damages many eyes. It is not that they feel pain or fear the knife. Sometimes it is almost impossible to make a patient look down. He thinks something difficult is required of him and will strain, corrugate his brows, sit up, open his mouth and do every thing but look down. Then it is very difficult to get other patients to keep their eyes fixed. After the operation, the patient will often feel some itching sensation on the second day. Up goes his bandage and he indulges in a good rub. With a healthy eye and an ordinarily intelligent patient our results will compare with any. It is the stamp of patient that makes our results appear poor.

In a series of 65 cases, I have notes of loss of vision in nine cases, seven recovered with good vision, and in two the result did not look promising at the time of their discharge.

The method of testing vision is the roughest, as long as he can see to work is all the patient cares about. When spectacles are applied for, I test the vision with lenses and the result is usually $\frac{3}{4}$ ".

EYE OPERATIONS AT AZANGARH DISPENSARY

By J. MORWOOD, M.D.,

MAJOR, I.M.S.,

Civil Surgeon

CATARACT operations performed during the last five years with their results and other particulars

CATARACT

- | | | |
|---------|---|-------|
| A (a) 1 | Total number of operations performed | 1,523 |
| 2 | Percentage of success | 74.55 |
| 3 | Forms of cataract—Senile, mostly hard | |
| 4 | Age of patients—Mostly between 55 and 70 years | |
| 5 | Sex—Both males and females | |
| 6 | Staple diet—Barley and dal (arhar) | |
| (b) 1 | Nature of operations—Mostly without iridectomy and with laceration of capsule. Some with iridectomy | |
| 2 | Site of incision—Corneal | |

* *Indian Medical Gazette*, March, 1901, p. 116

† *Indian Medical Gazette*, July 1900, p. 241

- 3 Asepsis Antisepsis—Eye first washed with corrosive sublimate lotion 1 in 5000 and then with boric lotion 1 in 20 Instruments first boiled and then put in boric lotion 1 in 20
- 4 Anæsthetic used—Cocaine lotion gr viii—oz 1
- 5 Method of dressing and protecting eyes Eyes dressed with boric lotion 1 in 20 Corrosive sublimate gauze and salalein broth wool
- 6 Bandaging eye, &c —Both eyes bandaged with an ordinary bandage Eye opened on the fifth day Before they used to be opened on the fourth day, but keeping the bandages for a day more gives better results
- 7 Operation for maturation —None

(c) 1 Complication of diseases or during operation—Granular ophthalmia treated before operation if bad

2 Prolapse of iris prevented by the use of atropine after operation and raising the head of the patient after operation by putting extra pillows under his head The patient is, as far as possible, allowed to remain on table after operation at least for about an hour and not disturbed Cough and constipation are sometimes causes of prolapse after operation They are relieved if detected It is more common in cases without iridectomy, if there is the least straining on the part of the patient whether from constipation or cough

3 Loss of vitreous—It happens in very few cases If the loss is not much, it has no effect on the union of the flaps of the wounds or the vision of the patient. The loss of vitreous is prevented by removing all pressure from the eyeball which has even the least increased tension or the eye ball looks very prominent Even the pressure of the speculum is minimised

4 Pterygium if present is excised before operation, otherwise the wound gapes, and very great difficulty is experienced in keeping the two edges in opposition

5 Atropine is invariably used after operation Eserine was dropped in at first in a number of cases, but atropine gives better results It is put in before operation too

(a) Method used to test results, especially in illiterate, &c The patient is asked to count dots measuring $\frac{1}{4}$ -inch in diameter with + 10 D glasses from a distance of 10 feet If he can see these dots clearly and count them, the vision is put down as $\frac{1}{10}$ or 1, if he sees them from less distance, the vision is put down as $\frac{\text{distance}}{10}$

Most of the patients are provided with cataract glasses of the strength of + 10D

(b) Most of the bad results are due to suppurative andritis—very few due to hæmorrhage

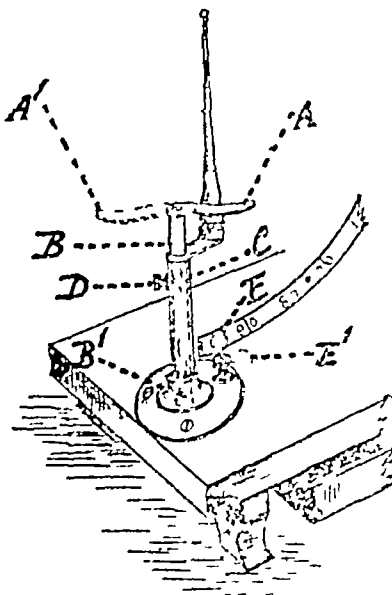
A MODIFICATION OF PRIESTLEY SMITH'S PERIMETER

By F O'KINEALY,

CAPTAIN, L.M.S.,
Calcutta

THE registering perimeter invented by Mr Priestley Smith* is well adapted for use in India, by reason of its simple construction and moderate cost

After some experience in the use of this instrument, I have modified it by the addition of a metal chin-rest and a clip, as shown in the accompanying sketch



The chin-rest A is attached to a metal tube, BB', on which it rotates horizontally (A¹) so as to be utilized for the examination of either eye. The tube BB' telescopes into the hollow metal pedestal C, and has a vertical range of movement of 4 inches, within which it can be fixed at any point by a screw D with a milled head

The clip E is hinged and is constructed to hold the free end of the arc of the perimeter when the instrument is being carried about. It can be turned down to E¹, so as to be out of the way when the visual field is being examined

I have had these modifications in use for the past three years and have found them to be advantageous. The chin-rest assists in fixing the head, and diminishes the fatigue and discomfort caused by the constrained position during examination. The clip will be found especially useful when travelling, as, by fixing the arc, it checks the vibrations which tend to throw it out of gear

I am indebted to Messrs Lawrence and Mayo, of Calcutta for having carried out my suggestions so efficiently



* Ophthalmological Society's Transactions, Vol III (1883), p 294

THE Indian Medical Gazette

JUNE, 1901

SOME OPHTHALMIC NOTES

"It is true that as the labours of our profession in India lie scattered over a wide extent of country, much of what is done is known but to official records, or appreciated only by those who have reaped the benefits these labours have conferred. But it cannot be that such large experiences are always to remain unnoticed or to lie buried among the records of the past. It is desirable that we should assert for ourselves a more prominent position in the published records of our science and give our experiences to the world."

JOSEPH FAYRER,
(*Clinical Surgery in India*, p 2)

THE CALCUTTA OPHTHALMIC HOSPITAL

THE Medical College, Calcutta, of which the Eye Hospital is part, was opened in 1835, the following is a list of the Ophthalmic Surgeons who have worked there since its foundation.

The first Ophthalmic Surgeon of which we can find a record is **Charles Chandler Egerton**, FRCS, who entered the medical service of the Honorable Company on 26th June 1823, became Surgeon on 1st August 1837. He held the chair of Ophthalmic Surgery in Calcutta for many years and retired in 1847, after which he lived for many years in England till his death in 1885. He was succeeded in the chair by **Dr William Martin**, who established a reputation beyond India as an Ophthalmologist. Martin entered the service in 1839, became Surgeon in 1853, and retired in 1859. He died in 1879. The next Ophthalmic Surgeon was **Joseph Richard Bedford**, who entered the service as Assistant-Surgeon in 1844 and acted as Ophthalmic Surgeon from 1853 to 1856. In the latter year he started for home, but died on board the *Alma* off Saugor Island. The next to hold the appointment was **Charles Archer**, M.D. He entered the service in 1842, became Surgeon in 1856, Ophthalmic Surgeon in January 1857, Surgeon-Major in 1862, Deputy Inspector-General in 1868. He retired in September 1873, and died in March 1884.

Nottidge Charles Macnamara next held the chair. He had established a great reputation for eye operations while he was Civil Surgeon of Mozuffepore. He entered the service as an Assistant-Surgeon in 1854, became Surgeon in 1866, Surgeon-Major in 1873, and retired in 1876. On his retirement he became Surgeon and Lecturer on Clinical Surgery to Westminster Hospital, London, and Westminster Ophthalmic Hospital. He is an F.R.C.S. (1875), and was Vice-President of the Royal College of

Surgeons in 1893-96. He is the author of several well-known books, of which the following are still in use, "Diseases of the Eye," which has run through at least five editions, and a "Treatise on Asiatic Cholera," still a mine of information on cholera, Macnamara being one of the earliest preachers of the water-origin of cholera.*

Macnamara was succeeded by **Henry Cayley**, FRCS, who retired as Deputy Surgeon-General, and was afterwards Professor of Military Medicine at Netley. He became Ophthalmic Surgeon in 1876, and was succeeded by **Richard Careless Sanders** in 1883, who held the appointment till December 1900, when, on his retirement, he was succeeded by **John Lewtas**, M.D., the present Ophthalmic Surgeon.

THE MADRAS EYE INFIRMARY

The Eye Infirmary was originally established in July 1819 by the Honorable the Board of Directors in a house known as "Compton's Gardens" in Royapettah, under the Superintendence of Surgeon R. Richardson. In June of the following year (1820), for reasons not known, it was transferred to Rundall's Road, Vepery. The reports submitted to the Directors were of so favourable a nature, as to induce the Court to continue to maintain the hospital, and in order that a suitable successor might be found, in the possible absence of Surgeon Richardson, Assistant-Surgeon T. M. Laue was appointed as an Assistant to Surgeon Richardson in October 1823.

During the course of the following year, Surgeon R. Richardson died, and was succeeded by Assistant-Surgeon T. M. Laue, who held the appointment till October 1844, when he died from apoplexy. Surgeon W. B. Thompson was next appointed, and held the office of Superintendent till 1851, when he proceeded on sick leave and died. Surgeon James Shaw then assumed charge in August 1851, and in August 1857 he proceeded on furlough for two years, during his absence, Assistant-Surgeon J. L. Paul performed the duties of Superintendent. In February 1862 Surgeon J. Shaw was relieved by Surgeon G. Smith who continued as Superintendent till February 1869, when he vacated to take up the appointment of Physician of the General Hospital. He was succeeded by Surgeon H. C. Brodick, who held charge for two months, when he died from an apoplectic seizure on the 22nd May 1869. From this date there were frequent changes of Superintendents. Apothecary Turnbull conducted the duties of the hospital till the 3rd September 1869, when he was relieved by Assistant-Surgeon E. F. Brockman, who continued in charge till the 3rd June 1870, when he was relieved by Surgeon W. N. Chipperfield. This latter officer relinquished charge

* For certain dates and facts in above note we are indebted to Major D. G. Crawford, I.M.S.—ED., I.M.G.

in September 1870 to take up the appointment of Acting Principal of the Medical College, and was succeeded by Surgeon M C Furnell, who continued to perform the duties of Superintendent till the 12th June 1872, when the permanent incumbent, Surgeon W N Chipperfield, returned. This latter officer held charge till the 22nd May 1873, on which date he died from apoplexy. On the 24th May 1873 Surgeon E F Brockman again took charge, and was relieved on the 27th December 1873 by Surgeon-Major M C Furnell, who was permanently posted to the hospital. On the 27th October 1874 Surgeon-Major Furnell vacated to take up the post of Acting Principal of the Medical College, and Surgeon E F Brockman once again was posted as Acting Superintendent, and was confirmed in the appointment on the 28th March 1875. The following officers after this date held charge of the institution —

	FROM	TO
Surgeon E. F. Brockman	23th March, 1875	April, 1877
Surgeon C Sibthorpe	23th April, 1877	11th July, 1878, Acting
Surgeon E. F. Brockman	12th July, 1878	February, 1884
Surgeon C Sibthorpe	February, 1884	23th Decr., 1884, Acting
Surgeon Major E. F. Drake Brockman	29th Decr., 1884	7th May, 1892
Surgeon Major T. H. Pope	7th May, 1892	24th July, 1895
Surgeon Captain R. H. Elliott	25th July, 1895	31st August, 1896, Acting
Surgeon Major T. H. Pope	1st Sept., 1896	To date

The private house on Rundall's Road, Vepery, in which the hospital was located in 1820, was found unsuitable, and Government were pleased to sanction the erection of the present buildings which were occupied on the 1st April 1886.

The hospital is entirely supported by Government.

It is the latest built Government Hospital after a design by the late Consulting Architect, Mr R S Chisholm. It consists of three main blocks, two storied, in a line running north to south and facing west with a large tank opposite the main entrance, enclosed by an ornamental railing. The centre or administrative block provides accommodation for an operation theatre, office, and examining room in the upper storey, and rooms for medical stores and steward's room and stores in the lower storey. The southern block, which is intended for females, provides accommodation for nine Europeans in the upper and twenty Natives in the lower storey. The northern block has similar accommodation, but is intended solely for males. A separate upper room in each block is reserved as officers' quarters, and is capable of holding two beds. A Native Military ward, which has accommodation for eight sepoys, was built in November 1889. Two wards, with six beds each, for the reception of Brahmin patients were opened on the 1st December 1891.

The out-patients' department consists of a separate detached block wherein a European waiting-room and consulting-room and dispensary are provided, with a separate *pukka* built shed

for Native out-patients. The Resident Assistant-Surgeon lives on the premises adjoining the hospital. Out-patients are seen daily by the Superintendent between the hours of 7 and 9 A.M. The practice of the hospital is open to all members of the medical profession, both European and Native, and affords an extensive field for acquiring knowledge in the diseases of the eye.

THE BOMBAY OPHTHALMIC HOSPITAL

THE Sir Cowasjee Jehangier Ophthalmic Hospital, Bombay, was founded in 1865 by the munificence of Sir Cowasjee Jehangier. It was opened in 1866, and cost Rs 97,000. The following officers of the Indian Medical Service have been the Ophthalmic Surgeons to the hospital since its foundation, Dr Hunter, Dr Sylvester, Dr Maconachie (from 1872), and the present Ophthalmic Surgeon, Major H Herbert, F.R.C.S., I.M.S., since 31st May 1895.

The hospital consists of 28 male beds and twelve for females. The attendance has always been large, in 1900 reaching the highest, viz., 15,110 out-patients and 812 in-patients. The figures for the attendance show a steady increase in the popularity and usefulness of the institution.

The staff consists of the Ophthalmic Surgeon, three Hospital Assistants, five ward boys, an ayah, sweepers, cooks and peon. It is entirely supported by Government.

THE OLDER OPERATIONS IN THE MADRAS EYE INFIRMARY

In the *Transactions of the South Indian Branch of the British Medical Association* (December 1898) Lieutenant-Colonel T H Pope, I.M.S., gave a most interesting *resumé* of the history of the Madras Eye Infirmary and of the work of his predecessors in that institution, some of which may be here reproduced. The first quotation to be made from the old records comes from the Annual Report of the Eye Infirmary in the year of trouble 1857. It is written by Dr J Liston Paul, then acting for Dr Shaw, as Superintendent of the Eye Infirmary. Dr Paul gives a clear account of the operation which he then favoured, viz., "anterior solution with Jacob's needle," which, in Paul's words, had in 1857 "the sanction of Ophthalmic Surgeons as the safest and most reliable general operation." At that time Paul stated the "extraction of the cataracts can be very seldom performed on the native, from the extremely shrunken state of the globe," and their extreme carelessness after an operation on the eye is of itself a contra-indication. He admitted, however, that in cases of "hard" cataract the choice lay between extraction and depression—the latter operation though unscientific was often successful if skillfully performed and in cases carefully selected.

THE OPERATION OF EXTRACTION IN 1866

DR GEORGE SMITH in 1866 discussed the poorer class of natives considered as patients, and points out a certain "obtuseness of sensibility of the nervous system" in them. They are described as "poor, anæmic and ill-fed, often the victims of intemperance, syphilis and mercury, frequently stiumous and covered with itch. the native shows evidence of old age and of senile marasmus, grey hairs, wrinkled lack-lustre skin, cataractous lenses and arci-seniles testify that the native is older *pathologically* than the European of the same age."

Smith then compares his results of the operation of extraction with those of Dr Archer at the Calcutta Hospital and of Von Graefe. In 1863 at Calcutta Archer had done 85 extractions with 14 failures (16.5 per cent failures), and Macnamara at Mozufferpore had 75 per cent cured, 10 relieved, and 15 per cent failures. Von Graefe at that time remarked that he calculated that of every 100 cases 65 give a complete result, 15 become perfect with after-operations, and of the remaining 20 about one-third regain "enough vision to find their way about," another third regain a less amount of sight and the last third (of the 20) remain completely blind. Of G Smith's 50 extractions 34 were successful and 16 failed, of these 16 there was a prospect of useful vision in 6 after secondary operations. He concluded that 75 per cent of extractions in natives of India should be successful. The state of the weather is a factor which is often referred to by writers in those days—the hot weather, according to Smith, was the best time for operations, the cold season next and the rains the worst time. In Calcutta Dr Archer had found most of his failures to occur from November to January. The same feeling as to weather seemed at that time to exist in England.

MACNAMARA ON LINEAR EXTRACTION

In the second number of the *Indian Medical Gazette*, published in February 1866, Mr N Charles Macnamara, then Surgeon to the Calcutta Ophthalmic Hospital, gave an account of 98 cases of linear extraction which he had operated upon in the year 1865. Again writing on the same subject in the *Ophthalmic Review* (Vol III, 1867, p 239), he analyses a total of 350 cases of this operation. In his article he used the term "cured" to mean ability to read or count No 1, or 11 Snellen's types with convex glasses at ordinary distances. He gives the following figures of 100 cases, cured 79, relieved 7, no better 14, of these 100 cases 42 were described as "hard," 52 as "mixed," and six as "soft." Of the cases cured a portion of the iris was removed in seven cases only. Macnamara had "no hesitation in saying that

linear extraction is equally applicable to hard and to mixed cataracts."

In his first paper (*Indian Medical Gazette* Vol 1, No 2) Macnamara had inculcated the practice of excising a portion of the iris before attempting to extract a hard cataract, a proceeding deemed necessary by Bowman. Further experience led Macnamara to modify this rule, and he formulated the following plan (*ib*, p 242)

"After section has been made, and the capsule lacerated with the point of the knife, I pass the scoop so far into the anterior chamber as to enable me to reach the outer margin of the pupil with its blunt extremity, and, gently retracting the instrument, I draw open the pupil with it to such an extent as to allow of my pressing the edge of the scoop against the outer margin of the lens, which immediately tilts one on its axis, and the scoop being thrust outwards, the cataract comes to lie in the concavity of the instrument, and may then be withdrawn from the eye."

DRAKE-BROCKMAN'S REVIEW OF 1,626 CASES OF CATARACT EXTRACTION

In the *Ophthalmic Review* for November 1888 will be found a valuable article by Surgeon-Major E F Drake-Brockman, F.R.C.S., then Superintendent of the Government Ophthalmic Hospital, Madras. He had previously recorded a series of 1,767 cases and the 1,626 discussed in the second paper were operated on from 1885 to 1888.

The average length of stay in hospital was eight to ten days. The 1,626 operations were made up as follows—primary capsule rupture 1,433 (268 with iridectomy, 1,165 without), 105 Mooren's, 59 Teale's, 15 Pagenstecher's operation and 14 linear. The cataracts are classified as follows—cortico-nuclear 939, hard senile 377, morgagnian 209, congenital 53, cortical 24, traumatic 21, lamellar 3 (total 1,626). The table shows that in Madras the "mixed" cataract is the most frequent form, and after it the hard senile. The nature of the food of Madras Hindoos is said to influence the formation of mixed and diabetic cataracts.

As regards the vision after operation sight was restored in 1,535 cases, and lost in 91, or 5.5 per cent of failures. The failures were 80 in the capsule rupture operation (or 5.5 per cent), 9 in Mooren's operation (or 8.5 per cent), 1 in Teale's operation (16 per cent), and 1 in the linear, (or 7.1 per cent). The causes of failure were suppurative keratitis in 51.6 per cent of the failures, iritis in 29 per cent, irido-choroiditis in 4 per cent, and suppuration of eyeball in 14 per cent. Of the total operations 883 were on right eyes and 743 on left eyes, the male cases were 902, females 724 and 249 had both eyes operated upon.

Women, writes Drake-Brockman, suffer from cataract about equally with men, but blindness is considered of less importance among them. Regarding ages, a table given shows

that most cataracts occurred between 50 and 60 years and the next largest numbers between 40 and 50. Among the native patients most cases occurred between 40 and 60 and among Europeans and Eurasians between 50 and 70. This agrees with an opinion expressed by Maconachie, when Surgeon of the C. J. Ophthalmic Hospital, Bombay, that "Senility evidently occurs about ten years in the Indian male, and in the Indian female about twenty years earlier than in the European." It is curious that Mr P. J. Feyer has also stated that another symptom of senility, enlargement of the prostate, also occurs ten years earlier in Natives than in Europeans.

DRAKE BROCKMAN'S OPERATION

Primary capsule rupture

THE best description that we have been able to find of the operation so largely practised by Brigade-Surgeon E. F. Drake-Brockman, I.M.S., when in charge of the Madras Eye Hospital, is given in the pamphlet to which we allude elsewhere by Lieutenant-Colonel T. H. Pope, I.M.S., M.D. The operation is called "Primary capsule rupture"—and the steps are as follows—

- 1 Separate the lids by speculum in the usual way
- 2 Secure the eye ball by catch forceps about a line below the margin of the cornea in the vertical meridian
- 3 Thrust the stop needle (Bowman's) into the anterior chamber, piercing the sclero corneal margin at a point 2 millimetres below the horizontal tangent. The needle is directed towards the centre of the eyeball, and then made to pierce the anterior capsule of the lens, which is lacerated in two directions at right angles to each other. The needle is now withdrawn very gently and slowly. I am of opinion that the laceration should be very delicately performed, so as to injure the lens substance as little as possible.
- 4 Enter the knife (with cutting edge upwards) at the same point where the needle was thrust in, and in the same direction. Depress the handle (the blade being kept on the flat above the plane of the iris) until the point is on the same horizontal line as the point of puncture. Push the blade on to its hilt (or as far as it will go without pricking the patient's nose), at the same time cutting through the cornea in the sclero-corneal margin. Finish the section while withdrawing the blade. The last stroke with the knife should be very gently accomplished, as any suddenness in the finish is likely to make the patient reflexly squeeze his eye.
- 5 Perform iridectomy if necessary.
- 6 Reverse the knife in your hand, and apply the back of the curette just above the upper margin of the corneal incision, gently depressing the upper lip of the wound. This, coupled with a little pressure of the catch-forceps below, starts the lens from its bed. As the lens escapes follow it up with the curette, stroking over the anterior surface of the cornea, using gentle pressure. This last manoeuvre, when dexterously performed clears the anterior chamber of a large quantity, if not all, of the soft cortical matter. Remove the lens, after expressed on the curette.
- 7 Relax the speculum, at the same time gently elevating and drawing forward the lids, and wipe out the whole palpebral enclosure and anterior surface of the eyeball with one or more 'cocoons'.

8 Sprinkle iodoform, kept in a small sprinkler, over the eyeball. Remove speculum.

The operation being now completed, the patient keeps the eye closed, and the dressings are applied by the assistant surgeon.

T. H. POPE ON CATARACT IN THE MADRAS PRESIDENCY

IN 1896 while at home on furlough Lieutenant-Colonel T. H. Pope, M.D., I.M.S., Superintendent, Ophthalmic Hospital, Madras, published a valuable and most interesting pamphlet in which he summed up his experiences of cataract in Madras. The pamphlet is based on an experience of 4,000 operations, and a detailed tabular statement is given of 500 operations done in five months in 1892-93. Dr. Pope notes the occurrence in many of his Hindu patients of (1) granular ophthalmia, and (2) diabetes. Diabetes he did not look upon as a serious complication as far as the operation for cataract was concerned, but granular lids necessitated treatment before operation. There is another class of Hindus met with in Madras, the Malyalis, or Malabaris, in whom cataract is often associated with atrophy or other deterioration of the optic nerve.

We cannot find space to follow Dr. Pope into all the details he gives of the preparation for the operation, he used a Liebhich's cataract knife with curette attached, and chiefly performed Drake-Brockman's operation, which we give a description of in another column.

Pope divided the cataracts into (a) cortico-nuclear, (b) morgagnian, (c) hard, (d) black, (e) soft, (f) capsular, (g) congenital, (h) traumatic.

OPHTHALMOLOGY AT THE CALCUTTA MEDICAL CONGRESS

THE subject of ophthalmology was well represented at the section of surgery and ophthalmology at the first Indian Medical Congress held in Calcutta in December 1894. For the benefit of the new generation which has grown up since that day we give a brief résumé of the articles on ophthalmic subjects contributed to the Congress.

The subject was introduced by an able and interesting address from Dr. Lal Madhub Mookerjee, in which he sketched a retrospect of ophthalmology in Bengal. Dr. Mookerjee, after referring to the work of the earlier ophthalmic surgeons in Bengal, gave his own experiences and pointed out that Macnamara in 1868 has shewn that even a loss of vitreous to one-fourth was not necessarily a bar to perfect vision. In 1880 Mookerjee had recorded 926 cataract operations at the Medical College with loss of vitreous in 122 from various forms of operation, in these 122 cases good vision resulted in 89. He also notes that the percentages of success more recently,

under Dr Sanders, of cataract operations averaged 76 per cent for six years, in one year reaching as high as 95 per cent

Another admirable article in the Congress Transactions is by Surgeon-Major (now Lieutenant-Colonel) G H D Gimlette, I MS, till recently Residency Surgeon of Indore, in which he fairly discusses the question of an iridectomy. Gimlette also notes that of some 600 cases his most successful have been those in which he found it possible to extract the lens in its capsule and without iridectomy, of 118 such cases only three eyes were lost. He is careful to point out that 'the very greatest care and a light touch are absolutely indispensable'.

Surgeon-Major (now Lieutenant-Colonel) C J Bamber, I MS, in a brief note showed the advantage in his hands of using strong antiseptics (viz, perchloride 1 in 2,000 and dusting with iodoform and boric acid). We have in another paragraph given a description of the operation, now often called Mulhoney's. Major G H Fink, I MS, in another paper gave his experiences on the treatment of impairment of vision after operations for cataract—based on an experience of 1,000 cataracts. An interesting discussion followed these papers.

MULHONEY'S OPERATION

THE operation known in the Punjab as "Mulhoney's operation" though we believe used by Pagenstecher, was fully described at the Indian Medical Congress by Assistant-Surgeon Meherchand, Rai Bahadur. It consists in the "removal of the entire lens in its capsule, by manipulation, by lower segment section, without iridectomy." It was to a very large extent used by Lieutenant-Colonel Mulhoney, I MS, when Civil Surgeon of Amritsar, and over 3,400 operations had (in 1894) been done in Amritsar by this method. The advantages claimed are that spasm of the superior rectus cannot interfere with the incision, there is less danger of an escape of vitreous, and an iridectomy is not required. On the other hand, it requires, it is said, greater skill and more delicate manipulation, and hence is not likely to be popular with those who cannot reckon their cataracts by the hundred. The incision is also somewhat larger, and if the capsule bursts, its attachment is apt to be left behind.

DR SANDERS' METHODS AT THE CALCUTTA EYE HOSPITAL.

THE great and deserved reputation which Lieutenant-Colonel R C Sanders, I MS, won as an operator render any account of his methods of considerable interest. We quote from an account given by Assistant-Surgeon Monomohun Gupta, LM & S, at a meeting of the (now defunct) Calcutta Medical Society in 1898 which

may be taken to represent Dr Sanders' latest methods (See *Indian Medical Gazette*, February 1898, p 72).

There is very little selection of cases, patients with advanced Bright's disease are to be rejected however, the eye should be examined for intra-ocular disease, and cough if present should be relieved before operation. The patient is given a good bath, and if he will remain in hospital, he is fed up for a few days. On the day before operation a purgative is given, and atropin (gr 11 to 51) is dropped into the eye. The eye and face is thoroughly washed with boric acid, perchloride of mercury is not used as it is supposed to excite some irritation in the eye. A few minutes before operation some cocaine is dropped into the eye (grs xvi to 51), the cocaine being freshly prepared with boiled distilled water. The following instruments are got ready—a Weiss speculum, a fixation forceps (with double teeth by Francis and without a spring catch), a Graefe's knife, a hard rubber spoon, and an iris forceps and scissors, &c, in case they may be required. The instruments are kept in a clean dry porcelain dish, and each dipped into boiling lotion just before use. Before being returned to their box each instrument is boiled and dried and then dipped in absolute alcohol. Bits of absorbent cotton-wool are kept ready. The dressings used were two pads of sal-alembroth wool, some antiseptic vaselin, and a soft muslin roller. The patient should be so put on the table that a good light falls on his face, and no shadow is cast by the operator's hand.

The operation usually done by Dr Sanders was a modified Graefe's method. Iridectomy was only used in complicated cases. The operator stands behind the patient. The right hand is used for the right eye and the left for the left eye. The globe is seized and drawn downwards. The forceps should be held at right angles to surface of the globe and should exert no pressure on the eyeball. The section is made on the upper edge of the clear cornea, so as to include two-fifths of its circumference, the precise length of the incision, as determined by the points at puncture and counterpuncture, should be modified in accordance with the surgeon's estimate of the diameter of the hard nucleus. Just before completion of the section, as the knife is cutting its way out, the edge is sloped a little forwards, so that the middle of the incision is on a slightly anterior plane to that of either end. In case of cataracts with milky cortex the incision should be smaller. *2nd stage*—Capsulotomy. The cystotome is introduced flatwise, with the blunt angle of its end first. Then the instrument is turned so that its point is directed towards the lens, and the capsule is gently torn. *3rd stage*—Delivery of cataract. The eye is steadied, without pressure, by the forceps, and the convex surface of the shell spoon is used so as to gently coax the lens out, any cortical fragments at the margin are

swept off. If at this stage any of the iris protrudes through the wound, this is at once *gently* reposed by separating the lips of the wound with the spoon or the spatula. "The proper management of pressure is the last attainment of the operator for cataract," and can only be learnt by experience.

COLONEL G. C. HALL, I.M.S., ON CATARACT.

THE two little pamphlets by Colonel Geoffrey C. Hall, I.M.S., F.R.C.S., are too well known to our readers to require any lengthened notice here. We noticed them fully when they were republished (*Indian Medical Gazette*, December 1899, p. 460). They are entitled "The Complications of Cataract Operations and their Treatment" and "A few words about Senile Cataract."

The first booklet is an extremely practical account of the steps of Von Graefe's linear operation. In no text-book on the surgery of the eye will a more practical, detailed, and explicit account of the various steps and complications be found than in these 31 pages. In the second little volume Colonel Hall discusses senile cataract, basing his conclusions on an experience of no less than 8,000 cataract operations. He divides senile cataracts into (1) fluid, morgagnian, (2) semi-fluid, (3) semi-hard, (4) hard. He lays stress on the fact that "the most important part of the lens as regards the operator is undoubtedly the soft matter or cortex."

He distinguishes between these varieties before operating, and adapts his operation accordingly. Atropin is used after operation in simple extractions. Colonel Hall gives a practical rule "if in doubt about complete maturity, always do an iridectomy." So many of our readers know these little books that it is not necessary to say any more about them, only we give the advice to get them to any young surgeon commencing his cataract work. He will find them of more help than the chapters on cataract in half a dozen text-books.

NOTICE TO CONTRIBUTORS

OWING to the extremely generous response to our request for articles for this special ophthalmic number we have in hand, and in print, a number of articles which we are reluctantly compelled to omit from this issue. We propose, therefore, to publish articles on ophthalmic subjects by the following medical officers in our next issue (which must be regarded as a supplement to our special number) *viz.*, by Captains O'Kinealy, Deane, and Maddox, I.M.S., Majors J. H. T. Walsh and Drake-Blockman, I.M.S., Lieutenant-Colonel G. M. Giles, I.M.S., Dr. Mittra

of Kashmir, Dr. M. L. Mittra (Campbell Medical School), Assistant-Surgeons Bramachari, Bharat, Ghose and Gupta.

Reviews.

Lectures on Diseases of the Eye.—By CHARLES BELL TAYLOR, F.R.C.S., London. Kegan Paul, Trench & Co., 1891. (Third Edition.)

WE have received for review a copy of "The Lectures on Diseases of the Eye," published by Dr. Charles Bell Taylor, the well-known Ophthalmic Surgeon of Nottingham. The book is not a new one, but this fact detracts little from its value. It is a very practical series of eight lectures on various diseases of the eye, *viz.*, cataract, squint, glaucoma, optico-ciliary neurotomy, use and abuse of mydiatics, eye troubles in general practice, defects of vision, and notes on cases.

The lectures are, as we said, eminently practical. In the first lecture an interesting sketch of the history of operations for cataract is given. Operations for cataract were known in the first century A.D., for our author quotes a dictum from Pliny—"Squamam in oculis emovendam potius quam extrahendam," which, though the couch of the bazar is more likely to approve of it than the present day Surgeon, at least shows that in Pliny's time the question of depression *versus* extraction was a debated one. Dr. Bell Taylor shows that it was in the memoir presented by Daviel to the French Academy in 1752 entitled "*Sur une nouvelle méthode de guérir la Cataract par l'Extraction*," that removal of the lens from the eyeball took its proper place in Surgery. Daviel operated while seated facing his patient. He used a lancer-shaped knife, and incised the lower half of the circumference of the cornea, delivering the lens through the natural pupil. The success of this operation was not great, 15 per cent of eyes were lost, and twenty "damaged." It is a matter of wonder that no serious attempt was made at improvement until a century later when Graefe in 1860 announced that it was the bruising of the iris which was the *causa teterrima* of disaster and loss of sight.

We cannot find space to follow Dr. Bell Taylor further through his valuable volume. No one who reads it can fail to derive benefit from it.

Ocular Therapeutics.—By F. W. MAX OHLEMAN, M.D., Minden, Germany. Translated and edited by Charles A. Oliver, A.M., M.D. (Univ., Pa.), London. H. Kimpton. Pp. 274.

THIS useful work, which is confined to the treatment only of eye diseases as its name implies, is a guide to the methods in vogue at the various ophthalmic clinics of the world.

It is divided into two parts. Part I, is general and deals with various therapeutic measures, *eg*, massage, thermic and chemical agents, electricity, blood-letting, &c., in general terms. Part II deals specially with the treatment of eye diseases. These are taken in anatomical order, diseases of the lids, lacrymal passages, conjunctiva, cornea, sclera, iris, &c. Part I contains much useful information about asepsis and antisepsis in eye operations. The opinions held regarding the value of Darcier's subconjunctival injections of corrosive sublimate by various eminent Surgeons are given impartially. In the treatment of various diseases the same judgment and impartiality are shown. Indications and contra-indications for various methods of treatment are given throughout. In all prescriptions the drug values are given expressed in the metric system of weights and measures, but for convenience the nearest equivalents in apothecaries' weights and measures are given in brackets immediately after the metric dose of each ingredient. What makes the book especially useful is the provision of three copious indices of cross reference for authors, drugs and diseases. In this way in a few minutes you can ascertain the treatment adopted by the best men for any particular disease and its complications. The book is well printed and bound, and must prove most useful to all consulting its pages.

An Essay on the Nature and the Consequence of Anomalies of Refraction By F C DONDEERS, M D, late Professor of Physiology and Ophthalmology in the University of Utrecht. Revised and Edited by CHARLES A OLIVER, A M, M D, Philadelphia. London H Kimpton, 1899. Pp 80. 8vo 6s net.

SOME thirty years have elapsed since this essay was written in the original Dutch, and more than ten since the famous author of it died.

Apart from the interest of the book on historical grounds, its value is enhanced by the fact that it is a summary of the late Professor Donders' monumental work on the subject in which he was the pioneer. The anomalies of refraction are summarized in a series of aphorisms which show, in a striking manner, how far the writer was in advance of his times, and how little has since been added to the conclusions at which he arrived.

The work cannot but be read with much profit, and Dr Oliver is well deserving of thanks for making this unique brochure accessible to the English-speaking ophthalmic world.

The publishers are to be congratulated on the general style of the book, and on the excellent portrait of Professor Donders which forms the frontispiece.

A Practical Handbook on the Muscular Anomalies of the Eye. By HOWARD F HANSRILL, A M, M D, and WENDELL REEFER, M D, Philadelphia. London H Kimpton, 1899. Pp 182. 6s net.

THE increasing attention which is being paid to the more obscure anomalies of the extrinsic ocular muscles, is exemplified by the fact that the consideration of their functional derangements occupies nearly two-thirds of this book.

After a short resumé of the anatomy and physiology of the ocular-motor muscles, and a description of their palsies, the authors give a detailed account of the various forms of heterophoria and heterotropia, and conclude by succinctly describing the operations of tenotomy and advancement.

The uneducated natives who constitute the bulk of hospital patients in India, are unlikely to suffer from the symptoms caused by the majority of these disorders, and many of the instruments required for diagnosis are too complicated to permit of general use. Nevertheless the subject is one of much interest, and, at times, of considerable importance.

The book is thoroughly practical, and the authors are to be congratulated on their lucid exposition of one of the most difficult branches of ophthalmology.

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BOOKS, REPORTS, &c, RECEIVED

Report on Bengal Lunatic Asylums
The Bengal Chemical Examiner's Report
Scientific Memoirs of Medical Officers of the Army of India Pt xii
Report on Plague in Sydney
Congrès International de la Præcise Médicale
Yates Thompson Laboratories Report, No 2
Psychology of Sex. Havelock Ellis, 1901
Schwabe's Studies in Malaria (German).
Transactions of Bombay Medical Society, April
United Service of India Journal.

COMMUNICATIONS RECEIVED FROM —

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Original Articles.

OPHTHALMIC NOTES FROM THE
BERHAMPUR MUNICIPAL HOSPITAL

By J H TULL WALSH,

MAJOR, I.M.S.

Civil Surgeon, Murshidabad

ONE of the improvements lately introduced into the management of the "*Indian Medical Gazette*" has been the scheme for the issue of "*special numbers*," dealing with one disease in all its phases, and collecting, so far as possible, the united wisdom and experience of the medical practitioners in India. The first "*special number*," dealing with Stone in the Bladder, was recognised as a distinct success, not only in India, but in every country to which our *premier* Medical Journal finds its way. It is in response to a circular issued by the Editor that these ophthalmic notes are compiled.

I have confined myself to the work at the chief hospital in this district, not from any selfish motive, but because—with one notable exception—the Assistant Surgeons in this district are not distinguished for their surgical work. The material is all round them, but, for reasons best known to themselves, they make no use of it. The exception to which I allude is the Subordinate Medical Officer in charge of the Hospital in Kandi. The Assistant Surgeon here, of course, takes his share of eye work with me.

From the Town Hospital records the attached table has been compiled. There was a small dispensary here in 1844, and the present institution was made over to the town some ten years later, with an endowment from Government (military?) funds of Rs 45,000 at 3½ %.

Statement showing the total number of Cataract Operations performed during the years 1895—1900

Year	Number of operations.	Hindu	Mahomedans	Age of the patients										Percentage of successful operations	Remarks
				1-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100		
1895	17	12	5					2	4	5	6			88	28
1896	66	38	21		1	2	12	26	14	1				85	71
1897	105	65	40			5	28	87	30	5				92	38
1898	125	80	45			2	8	88	45	28	9			91	2
1899	105	57	48			3	8	88	46	15				87	61
1900	86	51	35			1	5	20	45	15				93	02

This number includes 17 performed during the present year. As regards distribution, I have always given the Assistant Surgeon a fair share of the work, as I am of opinion that every Civil Surgeon should give his subordinates a chance of becoming skilled operators, especially now that a certain number of Civil Surgeoncies are open to successful Assistant Surgeons.

The patients have been all of the poorer class, and it is among this class that Cataract is most common in Bengal. This is a fact that can easily be substantiated by figures and observation. The bearing of this conclusion will be evident when I come to consider the causes of cataract. The diet of the poorer class in Bengal is chiefly rice of the coarser kinds. At times a little pulse, vegetables and fish, but to the majority these are luxuries and the staple diet is rice and rice only. It will thus be seen that the diet of patients afflicted with cataract is markedly deficient in proteid or nitrogenous elements. It is to this deficiency that I ascribe the great prevalence of cataract in Bengal. Add to this factor the strain thrown on the eye of those who must work in the glare of the Eastern sun. The lens "contains about two-thirds of its weight of water"* Of its solid constituents, no less than 24.6 per cent is a proteid body, a globulin, and the total proteids amount to 34.72 to 34.93†. A proteid tissue must be, to a certain extent, nourished by proteid food stuffs, and, when these are absent, fatty degeneration will ensue. The pathology of cataract, whatever its immediate cause, is *fatty degeneration* followed, in some cases, by a deposit of calcareous salts. I have, in one case, found on opening the eye a thin plate of calcareous matter and no other lens substance‡. There is one form of cataract, however, in which the degenerative process commences by a chemical abstraction of water from the lens tissues. This is the diabetic cataract—generally a "soft" cataract. By experimental injection of sugar into the blood of frogs a form of cataract, with vacuoles§ is induced. It is thought that these cataracts result from "abstraction of water from the lens". During the degeneration, which takes place in the more common forms of cataract, cholesterol is deposited. The normal percentage of this body in the healthy lens of the ox is given as 0.22 by Laptchinsky. By far the larger number of the cases treated have been senile cataracts. There have, however, been several cases of traumatic cataract. These are shown in the 'age columns' 10-20, 20-30, all the patients were young. I have not been able to separate these cases properly, owing to the notes on the bed-head tickets being scanty. Some, however, were *pyramidal*,|| resulting from ulceration of the cornea in early life. I have operated on such a case this morning (3rd April 1901), in which the cause was, as it often is in Eastern

* Gamgee.—*Physiological Chemistry*, vol. I, p 452 (the lens of the ox)

† Laptchinsky and Hoppe Seyler

‡ This was a traumatic cataract in a young man about 20 years of age

§ Gamgee, *op cit*, vol i, p 453

|| Perhaps these should not be called traumatic, but they result from a pathological wound and therefore I class them with traumatic cases.

countries, *ophthalmia neonatorum*. The lens was soft, almost fluid. Others of this class follow wounds, or ulcers caused by foreign bodies, bits of stone, iron, etc. It is not necessary to enter into any detailed classification of cataracts, that of the standard works on eye diseases being accepted. It is, however, usual to call senile cataracts *primary cataracts*, those following on disease or wounds *secondary cataracts*. It is of great importance that the skin of the forehead, cheek, nose and eye-lids should be well washed and rendered aseptic. The next step towards the operative treatment of cataract is to render the eye insensitive to pain. It is only necessary to mention one *anæsthetic*—*cocaine*. I am not aware that chloroform is ever used now-a-days, and *eucaine*, which I have tried, has no advantage over cocaine. A solution of cocaine—eight grains to one drachm of distilled water—is always kept ready and frequently renewed, the fresher it is the better it acts. A few drops are taken up in an ordinary medicine dropper and forced out of it on to the conjunctiva, the lower eye-lid being drawn down. The patient should be in the recumbent position, otherwise some of the cocaine solution will be wasted. If a patient is waiting until his turn comes, I get him to lie on the floor of the operating room or to sit with the head well thrown back. In five minutes the patient should be ready for operation. I generally test the eye with the handle of one of the instruments, ready in a porcelain tray filled with *boracic* lotion. If there is any shrinking or conjunctival reflex more cocaine must be used. I have never used any knife but that of Graefe, so can not institute any comparison between it and other knives. Similarly, I do not discuss the various forms of incision, since I use one only, which includes a little more than the upper third of the cornea, and is made entirely in the cornea, but as close to its junction with the sclerotic as possible. The incision being completed, the capsule is torn with the needle and the lens pressed gently out from below with the back of the scoop. As a rule, nothing further is required. The edges of the wound fall together. The eye is washed with *boracic* lotion. A dressing tin is placed against the head, and a fairly copious amount of the lotion is poured gently over the eye before the *speculum* is removed. A plug of wool prevents the lotion running into the ear. The eye is closed and a little iodoform sprinkled over the lids. A pad of *Sal-alembroth* wool is used as the dressing. As a rule, I remove the first dressing on the fourth day. After, the eighth-day cases, which have run a normal course, are provided with a shade. If they wish to go home they are advised to return when the other eye is ready. If both eyes have been successfully operated on the patient is given spectacles. Numbers 10 to 13 are generally

kept for the purpose. These give clear vision for ordinary objects. Few of the out-patients can read, but educated persons really require stronger glasses +16 to +20 for reading or fine work. A few words concerning iridectomy will complete all that need be said of the treatment of a normal cataract. I never willingly do an iridectomy when the iris is healthy, and contracts and dilates normally under the stimulus of light. If, on pressing the eye to extract the lens, I find that the iris is pushed up and likely to be injured I draw it down over the edge of the tilted lens with a flat scoop held in the left hand. The lens will generally come out whole in *senile* cataracts, but in soft cataracts bits may remain behind. These would be absorbed in time, but it is better to remove them with the scoop. Bits of capsule may also be removed, except when there are any adhesions to the iris, when they should be left alone. The only cases in which I do an iridectomy are those in which there are adhesions of the iris to the capsule. The iridectomy then serves two purposes. It gives the operator room to separate adhesions with a blunt needle and allows the passage of the lens without further damage. The word "willingly" used above requires explanation, though, doubtless, what has happened to me has happened to other operators. In some cases, either because the cocaine has not acted thoroughly or, because the iris is hypersensitive, the following difficulty occurs. As the knife is passed into the anterior chamber, the iris suddenly dilates and then contracts and part of it is seen lying on the edge of the knife. The first time this occurred to me I withdrew the knife and waited while more cocaine was applied to the eye. The next time it occurred I thought that, as the knife was sharp, I would continue the incision. This I did, removing a small truncated wedge of iris without any difficulty, thus performing, so far as results were concerned, a satisfactory iridectomy. I am glad to say this does not often happen, when it does, it need cause no anxiety. I have tried removing the lens entire with the capsule, but I can see no advantage to be gained, and it certainly increases the danger of escape of vitreous humour. I soon gave up that method. Occasionally, if the incision is carried too far up into the sclerotic, some hæmorrhage may occur. It need cause no anxiety, as the blood is readily absorbed, unless the eye is congested and unhealthy at the time of the operation. Another danger present under the same conditions is escape of the vitreous humour. If no considerable portion escapes the case may do well. I remove the extruded portion, pushing the iris gently back into the wound. If the patient lies still on his back the result may be good. I think that a few drops of *eserine*, which cause the iris to contract and close in the "*vitreous*," are very useful in such accidents. Before closing the eye

after operation see that the edges of the corneal wound are properly in contact. Sometimes the *iris* is prolapsed into the wound, and it should be removed from between the lips of the wound. Of other methods of removing cataracts I have nothing to say. Suction I have never practised and I can see no value in the operation. 'Needling' the lens and leaving it to be slowly absorbed seems to me waste of time. I have performed the operation twice—once in a young man who declined operation by incision, and once quite lately in a boy with *traumatic* cataract. There had been a very extensive wound in the cornea and the incision for *extraction* would have passed through part of the fairly recent *cicatrix*. I thought it possible that the cicatrised portion of the cornea might not heal readily after a cutting operation. I have no experience of stitches placed in the cornea or conjunctiva. I cannot see any benefit obtained by these stitches, and I can see that a foreign body is introduced into the eye, which may irritate the conjunctiva, and, further, if not absolutely *aseptic* may be the means of ruining an easy and generally successful operation. When eyes are lost after operation for extraction of cataract, the untoward event may be due to—(1) want of cleanliness before the operation, (2) *iritis* following damage to *iris* during the operation, especially when *synechiae* were present, (3) ophthalmitis in weak persons, or in patients suffering from syphilis or rheumatism, (4) to interference with the dressings by the patient or the friends, (5) to presence of *glaucoma*.

OPHTHALMIC NOTES FROM CHAPRA

BY R. H. MADDOX, M.B.,
CAPTAIN, I.M.S.,
Civil Surgeon

Cataract—I enclose herewith a table (Table I) showing the total number of operations for senile cataract undertaken at the three

in-door dispensaries in this district, with the number successful and percentage of successes taken from the records for the year 1891-1900.

As regards this table there is little to say except that possibly more difficult cases were attempted at the Head-Quarter dispensary and also possibly a more rigid check on cases noted as "cured" was kept.

I also enclose a table (Table II) giving details as to the ages, sexes and nationality of the cases of senile cataract operated on in the Chapra dispensary and also some figures relating to the operation on forms of cataract of the "soft" variety.

The remarks I now propose to offer are founded on the records of the Chapra dispensary, and my own practice and experiences at Chapra since December 1898.

(a) *Age of patients*—See Table II. The decade from 45-55 furnishes the largest numbers, but it should be borne in mind that no patient ever knows his age, and his age is usually registered by the hospital clerk.

Sex—Females furnish distinctly the larger number, and this is larger than the usual actual sexual proportion.

Caste—Hindus of all castes give 88.39% of the total operated on, and Mahomedans, 11.61%.

The proportion of Hindus in the district generally is about 85-90%, though it is not so high in the town. It is perhaps possible that it is slightly more prevalent among the Hindus.

The *staple diet* of the poorer classes, both Hindus and Mahomedans, is bread made of the flour of wheat, maize or barley with *dāl* (*rahar*, *masur* and *kesari*) cooked with mustard oil as a rule. Rice to a fair extent is also eaten.

The Mahomedans, as a class, eat more meat than Hindus.

I have not found one caste of Hindus suffer more than another, the castes most seen are those which predominate in the district.

TABLE I

Statistics of Operations for Extraction of Senile Cataract, Saran District Dispensaries, 1891-1900

	CHAPRA			HATHWA			SEWAN.			
	Total operated	Successful	Percentage successful	Total operated	Successful	Percentage successful	Total operated	Successful	Percentage successful	
1891	110	92	83.63	24	21		42	37		<p><i>Note</i>—Only cases returned as cured have been shown as successful. Those shown as "relieved" or "remaining" are counted as unsuccessful.</p> <p><i>Sevan</i> was occupied by a Hospital Assistant after 1897 who did not venture on cataract operations.</p>
1892	154	116	75.32	15	11		26	23		
1893	21	161	76.30	30	26		36	35		
1894	197	147	74.62	29	23		31	27		
1895	121	93	76.86	46	28		31	31		
1896	167	133	79.64	31	29		50	45		
1897	146	132	90.41	47	39		20	19		
1898	102	80	78.43	34	24					
1899	143	124	87.79	40	38					
1900	133	109	81.55	44	38					
TOTAL	1,484	1,187	79.98	330	277	83.93	236	217	91.94	<p>Grand Total for District—</p> <p>Operations 2,050</p> <p>Successful 1,681</p> <p>Percentage 82%</p>

TABLE II

Statement showing the result of Ophthalmic Surgery at the Chapra Charitable Dispensary during the years 1891—1900

YEARS.	HARD CATARACT															SOFT CATARACT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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Association with diabetes or albuminuria.—I have not met with any cases specially related to either of these diseases either in the records or in practice

(b) *Nature of the operation*—So far as I can ascertain, the operation usually described in the text books has been the one preferred—in some cases in previous years iridectomy was not performed

The operation I prefer myself is as follow —

The patient on admission is washed and clothed in clean clothes and atropine drops (4 grs and 3i aq Distil) put in the day before operation if possible. When on the table, cocaine, a few drops of the 5% solution, having been dropped into both eyes, the whole face is carefully washed with soap and water

After this the whole face is washed with solution of chinosol 1 in 2,000. The eyes are then opened and the conjunctival sacs of both eyes are well cleansed with the same lotion

All instruments are boiled and kept in sterilised boric acid lotion, boric acid lotion is the one used during the operation and for instruments as I found chinosol darkened the instruments

Cocain is again instilled into the eye to be operated on until it is anaesthetised

The other eye is covered with lint soaked in boric lotion. The eye to be operated on is then opened and the speculum inserted

The incision is then made by steadying the eye with conjunctival forceps in the usual way. The knife is entered in the cornea as near the sclero corneal junction as possible, passed a little downwards in the anterior chamber and then across to the same level as it entered just on the corneal side of the junction where a counter-puncture is made, and the flap is cut upwards as near the junction as possible at the sides to the top of the cornea just on the corneal side of the junction

The incision is thus kept just within the cornea and not in the junction. The disadvantage of this is that a rather larger incision has to be made, but the advantage which to my mind counterbalances this is that there is no wounding of conjunctival vessels, in my experience all natives who have passed middle life have more or less conjunctival congestion, and the slightest prick of the conjunctiva causes very considerable bleeding which much obscures the operation, and also blood is apt to get in between the lips of the wound into the anterior chamber. The size of the flaps varies with the estimated size of the lens

The next step after this is iridectomy which is performed as described in the text-book

The anterior capsule is then scratched across and the lens delivered by pressure from below with a strabismus hook which, as suggested by Captain Smith of Jullundur, I find more useful than a scoop, and gentle counter-pressure on the sclerotic above the incision

Any remaining portions of lens, if they cannot be expressed by gentle pressure on the cornea, are removed by a scoop. Since reading Colonel Geoffrey Hall's little book, I have not performed iridectomy in cases where I could diagnose a fluid cortex with a small nucleus floating within. I have been able to diagnose a number of these cases, but have failed to recognise some before hand

The eye is then cleansed with boric lotion, if necessary, a drop or two of atropine solution are put in, the eye is closed, iodoform and boric acid is dusted over the lids, and then a piece of boric lint moistened in warm boric lotion put over them

This is covered with a pad of sal alembroth wool and a bandage put on over both eyes

If there is no pain the bandage is left on till the third day, when it is removed, the eye is kept closed and the lids cleansed with boric lotion, and a fresh pad and bandage applied, on the fourth or fifth day

the eye is opened and gently cleansed with boric acid or chinosol lotion

In favourable cases the dressings are removed on the 10th—12th day and a shade applied and the patient discharged about the 15th—20th day

In a series of cases, I tried the operation described by Captain Henry Smith, I.M.S., Civil Surgeon of Jullundur, in the *Indian Medical Gazette* for July 1900 (Extraction in Capsule). Out of 33 cases operated on, following his method closely in all its stages, there were 28 cases discharged as cured or 84.84 per cent

In the 33 cases there was prolapse of vitreous, usually slight, in eight cases

In the five unsuccessful cases, in three it is not noted that there was any accident during operation

In one case there was escape of vitreous and the patient used to pull dressings off daily. In another case there was escape of vitreous with lens, and lens capsule burst as it was being delivered

This operation has much to recommend it, it is not complicated and has the great advantage of rarely requiring an instrument to be put within the eye after the incision is once made

I practised this operation in all cases from 25th July to 31st December 1900. Since that time I have given it up for the following reasons, which seem to me to make its value less than the usual operation —

(1) The larger amount of pressure which has to be applied during the operation with danger of excessive loss of vitreous

(2) The fact that the incision crosses the front of the cornea a little above its centre is liable to produce an opaque scar in the line of vision, and also the scar being in this position there is a greater tendency to bulging forward of the cornea with consequent astigmatism. Owing to plague I did not have so many cases during the period as I might perhaps, so I have not yet sufficient experience of the operation to be valuable but I give the above for what it is worth

(c) *Bad results*—The commonest cause is iridocyclitis with subsequent disorganisation

Suppuration is also fairly common and is in a great majority of the cases due to the patients taking off their bandages and rubbing their eyes and trying to see

Old women are apt to weep at their absence from home, with frequently disastrous results

Hæmorrhage, as mentioned above, is, I am afraid, in most cases due to a mistaken kindness in operating on an eye that should be left alone. The hæmorrhage rarely occurs actually during the operation but sometimes after the patient is back in bed and sometimes an hour or two later

A few cases where the patient bruises the eye by turning in bed during sleep have had a rather serious hæmorrhage which has finally completely cleared up with excellent results.

One of these was in a case in which I was specially interested, and which I have been able to keep under periodical observation. A man aged about 75-80, father of my bearer, who is himself an elderly man, and had been an officer's servant during the mutiny, came from his home saying he had been blind for 10 years, the cataract was over mature and with some hesitation I operated two years ago, vision was good immediately after operation, but on the third day pain set in and a hæmorrhage was found filling up the anterior chamber, probably caused by an injury during sleep, there was alsoitis later, in about a month the whole thing cleared up and there was moderate vision. He went home and returned six months later for glasses, and said he could get about by himself, whereas he had been led about for 10 years. Glasses were supplied and he is reported still to be able to get about and look after himself as much as any other man of the same age.

ON IRRIGATION OF THE ANTERIOR CHAMBER IN CATARACT OPERATIONS

By G. M. GILES, F.R.C.S.,

LT COL., I.M.S. (Retired)

EXCEPT as regards the details of the construction of the very simple apparatus employed, there is, of course, nothing original in the method of dealing with cataract I am about to describe, but it is nevertheless a fact that it has been tried by but few operators.

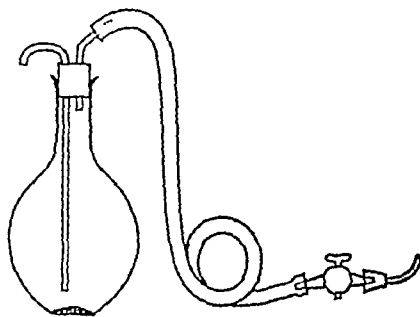
Every one who has any extended experience in operating, as most of us have, in these parts, must have constantly met with cases in which pieces of residual cortex refuse, in a most teasing way, to be delivered by external manipulation of the eyeball, and which ultimately have to be extracted by the scoop, the use of which appreciably diminishes the certainty of success.

Some six years ago, after a considerable interval in other branches of departmental work, I found myself once more in charge of a civil station in the North-West Provinces and, as a necessary consequence, at once found myself having to undertake a number of ophthalmic operations which, if but small in comparison with the six or eight hundred per annum done by certain giants of physical and technical energy at work in neighbouring districts, would at least have been thought large by the ordinary London ophthalmic specialist.

I dare say that, at the start, my hand was not so steady as it now is, and it may be that this led me to cast about for some better method of dealing with cortical matter than the customary massage and scoop. When looking over my 'Biathwaite' I found an account of some excellent results obtained in this direction by

McKeown of Belfast by the agency of free irrigation of the anterior chamber —

I did not want to wait for months till I could get the instrument from Europe, and, moreover, the plan of securing sterility of the flask and its contents appeared to be somewhat cumbersome, and likely to be uncertain in the hands of the average "compounder," and I therefore set myself to construct an apparatus for myself. The only part in which the aid of an instrument maker was indispensable was the smooth ended nozzle which is introduced into the anterior chamber, and I chanced to have, amongst my microscopical tackle, an injecting apparatus fitted with a tiny tap, the nozzles of which were just such as were required for the purpose. A chemical flask, holding about 4 oz., and some bits of glass and rubber tube furnished the rest of the apparatus, which I figure below —



As will be seen, it consists of a chemical flask fitted with a rubber tube which is perforated by two holes. Into one of these holes is fitted a piece of glass tube reaching nearly to the bottom, and bent completely round in the part outside the cork. This tube serves to admit air, and so to allow the contents of the flask to flow out through the other tube, by gravitation, when the flask is inverted. The other tube projects only about half an inch inside the cork and is slightly bent, at an oblique angle, just outside it. Its total length is about 3 inches and it is connected with the nozzle by means of about 14 inches of small drainage tube.

It is employed as follows — The flask is three-quarters filled with saline solution (one drachm common salt to a pint of water) which is filtered at the time of using directly into the flask, by means of an ordinary small glass funnel and filter paper. The rubber cork with its tubes, but with the rubber tube detached, is then introduced and tied in and the flask is then placed on a retort stand, over a spirit lamp, and brought to a boil. When the steam issues freely from the shorter tube, the tube and nozzle which are always kept immersed in carbolic solution, are taken in one hand and the free end of the rubber tube slipped over the exit tube of the flask, taking care of course that the tap is open.

With the other hand, guarded by a flannel holder, the flask, still boiling, is taken off the retort stand, and smartly inverted, on which the boiling fluid begins to run out through the jets. After allowing a little to run, the tap is closed, and the sterilization of the interior of the apparatus, and the solution is secure.

The flask and its jet are then placed in a small bowl of cold boric or carbolic solution, and by the time one's other instruments have been boiled, will generally be found to be just the right temperature. At first I had a third hole in the cork, in which was inserted a chemical thermometer so that I might ensure the fluids being exactly of normal temperature, but I soon found this to be a cumbersome and needless refinement, and in practice it is quite easy to judge of the temperature by letting the jet play on the hand for an instant. Before using, the nozzle and part of the tube is dipped, like every other instrument into boiling water, and we thus secure the absolute sterility of the irrigating fluid, in a manner that leaves hardly any chance of miscarriage.

The incision having been made, and the lens delivered in the usual way, the irrigator is held, by an assistant in an inverted position, about 8 or 9 inches above the level of the eye, and the operator introduces the nozzle of the miniature irrigator between the lips of the wound, and directs the current in turn from side to side of the anterior chamber.

In the majority of cases, the whole of the remaining cortical matter is cleaned away, as if by magic, but in a few cases it may be necessary to exercise some finesse in dislodging some particle that chances to remain adherent to the capsule, and I do not mean to say that I have not met with cases in which, in spite of my irrigator, I have been obliged to resort to the scoop, but such a necessity at any rate arises only very rarely.

Though I have often thought of having a more *pucca* apparatus made, my original makeshift has answered so well that I have used it ever since, and although I have broken dozens of flasks, the old injecting tube and tap are still to the fore.

I have often intended to send to the *Gazette* a description of the easily improvised instrument that has served me so well, but the man who only counts his cataract operations by hundreds is hardly entitled to "bark" as "Su Oracle" in this country, and, but for the fact of the coming cataract number and the fact that I am bidding adieu to the "Land of regrets" and so have probably "done" my last cataract, I should probably have continued to wait till I had accumulated a locally respectable number of cases and found the energy to put them into statistical form. In saying good-bye, however, to the service I wish to put what I have found a most useful 'tip' at the service of others, which, I am convinced, is one which, if it can hardly improve, will at least be found to lessen the tediousness of the work of even experienced operators.

OBSERVATIONS ON 235 CASES OF OPERATIONS FOR CATARACT

By MRIGENDRA LAL MITTRA,

ASST SURGEON

Teacher of Surgery, Campbell Medical School, Calcutta.

I HAVE upto now performed about 400 operations for cataract, but I could collect records of only 235 cases. I propose to give a short résumé of the recorded cases, with the technique of the operation, as performed by me —

TABLE I

Age	Male	Female	Total
20—30	4	1	5
30—40	20	7	27
40—50	35	17	52
50—60	95	36	131
60—70	12	8	20
TOTAL	166	69	235

It would appear from the above table that the disease occurs most between the ages 50-60. Cases noticed between 20-30 were either traumatic or zonular.

The technique of the operation —

(a) *Preparation of patient* — I have always found it useful to keep the patient in hospital for at least a couple of days before operation, during which time he gets used to the surroundings, and, by conversing with the patients whose eye sight has been restored by operation, his confidence is ensured. During this time his general health may be looked into, which is of great importance in diabetic subjects. Urine with 30—40 grs of sugar to the ounce, or with albumen, I consider as contra indication. I have operated on such cases and have met with serious results. I have found them, however, quite amenable to treatment with restricted diet for a few days. An operation thus undertaken is free from all risk. I dwell particularly on this point, as diabetes is so very common in Bengal.

On the day of operation the eye and the external parts are aseptized by a thorough soap and water wash, followed by an irrigation of Loto Hydraz Perchlor, (1 2000 for external parts and 1 4000 for conjunctival surface). The inner canthus should be specially attended to. Any discharge from the lachrymal sac should be well pressed out. Shaving of the eye brows and clipping off of the eye-lashes are not necessary. Instruments can be boiled in a big test tube in carbolic lotion (1 20). For anesthetizing the eye, the solution of cocaine should be prepared with cold distilled water. The lotion thus prepared works much better than when made with hot water.

(b) *Corneal section* — I always make an entirely corneal section, as by attempting to make sclero corneal section, on three or four occasions I injured the ciliary bodies, leading to serious irido cyclitis. The section should embrace $\frac{3}{4}$ of the circumference of the cornea. Small incisions invariably give rise to difficulties in the delivery of the lens, causing bruising of the iris, with subsequent serious iritis. I have seen Surgeons obliged to bring out the lens piece-meal, and some times to leave the lens substance behind, owing to the small incisions. It is better to err on the side of making a too large rather than a too small incision. I have tried both the upper and lower incisions, and have found them equally advantageous, though, as a matter of habit, I prefer the upper one. In some extremely nervous people, where it is impossible to make them look downwards, a lower section is advantageous. Dilatation of the pupil before operation, except for diagnostic purposes, is of no practical utility, as it contracts as soon as the knife traverses the anterior chamber. Sometimes I have made a conjunctival flap, unintentionally, while completing the section. In these cases union took place earlier.

(c) *Iridectomy* — The question of iridectomy is still an open one, but it will be seen from the following table that there are more after troubles, such as, iritis, synechia, prolapse of the iris, &c, when the operation is performed without iridectomy than when it is done with it. It must be admitted, however, that an operation without iridectomy is more perfect, as there is less mutilation of healthy parts and the optical results are decidedly better. In illiterate persons, where optical perfection is not of much importance it is better to do an iridectomy, as there is less risk and more certainty. —

TABLE II

	Cured without trouble	Cured with trouble	Lost	Total
With Iridectomy	104	9	7	120
Without Iridectomy	91	13	11	115
Total	195	22	18	235

(d) *Laceration of capsule*—It is a routine practice but can be avoided in a large number of suitable cases. When the lens is brought out with its capsule intact, there is no possibility of leaving the capsule or lens matter behind. The vision is more perfect and after troubles much less. With a good incision and iridectomy plus judicious pressure, there should be no difficulty in bringing out the lens with its capsule. In forty seven of my cases, I delivered the lens without puncturing the capsule, in three of them there was some escape of vitreous, one only being lost. The only cases not suitable for this kind of operation, are those with fluid cortex, as they are likely to burst during the passage through the corneal opening, when their subsequent delivery becomes a matter of some difficulty.

(e) *Delivery of the lens*—This is best effected by pressure and counter pressure above and below the lens. The cortical substance should be well coaxed out along with the nucleus. A quantity of this substance sometimes remains hidden under the iris, and is likely to be overlooked. Its presence in any quantity favours the advent of iritis and may occlude the pupil. Presence of opaque capsule is not of much consequence and too much handling to take out the last bits of capsule is always to be avoided. A good pupil can be obtained by a subsequent needling operation.

(f) *Escape of vitreous*—This is a very common accident and is almost always the result of undue pressure. It is more common in cases where there is + tension (not actually glaucomatous), and where the eyeball is unduly prominent. Escape of even $\frac{1}{2}$ of the vitreous makes no difference in the subsequent progress of a case. But if it continues to flow for any length of time and keeps the wound gaping, the eye is almost sure to go bad.

(g) *Presence of air bubbles in the anterior chamber* towards the end of operation, as is frequently noticed, is quite harmless. In some instances I have allowed them to remain on purpose and found no bad results.

(h) *Toilet of the wound* is of great practical importance. The iris should be well replaced and no streaks of blood, tags of iris or any other putrescible matter should be allowed to remain in the wound. The apposition of corneal edges should be as perfect as possible. I use atropine only in operations with iridectomy.

(i) *After treatment*—I shut up the operated eye only. Bandaging of both eyes makes the patient more uncomfortable, and a feeling of utter helplessness brings on, in some of them at least, an uncontrollable desire to undo the

dressing. The first dressing is changed at the end of 48 hours and a drop or two of atropine is instilled into the eye. If every thing goes on well, a green shade is put on on the fifth day. I continue the use of atropine till the pupil becomes quite regular.

OPHTHALMIC NOTES FROM MIDNAPORE

By B. H. DEARE,

CAPTAIN, I. M. S.,
Civil Surgeon.

The table below shows the number of cataract operations performed in the Pearce Hospital, Midnapore, during the past five years.

1 **Iridectomy**—I make it a rule to perform an iridectomy in nearly every case, and am of opinion that it is the safe course to pursue in most cases, for in the past 158 (cases) I have not had a single prolapse of the iris, and as our patients are mostly illiterate, it is not so absolutely essential to give them the slightly better vision gained by leaving the iris intact at the risk of prolapse and iritis. As a further precaution, I may state that I always use eserine freely after the operation. Again in Morgagnian cataracts there is a great danger of the small nucleus slipping up behind the iris if a free iridectomy has not been done.

2 **Antisepsis**—The only antiseptic we use is boracic acid dissolved in boiled water (1-20), the whole face is cleaned, special attention being paid to the parts surrounding the orbit, to the conjunctive and inner canthus. After the operation any blood is carefully removed and the parts again cleaned with boracic lotion, and the closed lids are smeared with a preparation of vaseline iodoform. I do not use carbolic or mercurial solutions as I believe them to be irritating. In my opinion thorough cleaning with boiled water with a mild antiseptic like boracic acid is the best method.

3 **Anæsthetic**—Up to a recent date cocaine solution 10 per cent was used, and for dilatation of the pupil atropine solution, but during the past year I have used Euphthalmine (grs. 14 oz. 1) in place of atropine and holocaine (5 per cent) in place of cocaine with the best of results. In very nervous patients I have some times had to use chloroform before attempting to operate.

Statement showing the Number of Cataract Operations during the last five years from 1896—1900 at the Pearce Hospital, Midnapore

YEARS	Number of cataract cases	AGE			CASTE				SEX.			RESULT				REMARKS
		Above 11 years	12 to 40 years	41 to 50 years	Musalman	Hindu	Native Christian	Other class	Male	Female	Children	Cured	Relieved	Otherwise absconded	Died	
1896	28	1	5	22	2	25		1	21	6	1	22	2	4		78 7
			15	25	11	26		3	24	16		84	1	5		85 0
1897	40															
1898	33		7	26	9	20		4	22	11		28	3	2		80 0
1899	53		11	47	16	36	1	6	49	9		48	4	6		82 7
1900	75		24	51	18	45	1	11	49	26		72	2	1		96 0

4 Operation—In nearly all cases I do the luear incision and make a good conjunctival flap, but I have never yet found it necessary to stitch down the conjunctival flaps as some operators do. In every case both eyes are bandaged after operation and a dose of liquor morphine is given, and unless there should arise any indication to the contrary, the first dressings are not opened till the fourth morning, and after the case is dressed daily. The patient is kept on a low diet, and Pill Rheo Co is generally given on the third morning. I have a strong faith in the utility of the Liq Morphine in the after-treatment—especially in nervous patients.

So far experience has shown me that a small "show" of vitreous, when it accidentally occurs, does no particular harm, but should one be unfortunate enough to have a fair loss of vitreous, the cases generally end badly.

DESCRIPTION OF A NEW PATTERN OF EYE SPECULUM

BY H E. DRAKE-BROCKMAN, F.R.C.S., &c.,

MAJOR, I.M.S.,

Agency Surgeon, Bharatpur

THERE are one or two important defects in all the eye specula, hitherto devised and usually sold by surgical instrument makers, which have constantly come prominently to my notice during the performance of operations on the eye, and which, after considerable experience of the same, have forced me to try and effect a remedy for them. It is with that object in view, that I have devised an instrument, which I venture to bring before the notice of the profession, as having, in my humble opinion, very decided advantages over those at present on the market.

The majority of the eye specula at present used, are made too clumsy and often not easy to handle, owing, in great measure, to their being constructed of too thick wire, which of course must render the tension on the eyeball slightly greater while keeping open the eyelids, and being clumsy, and perhaps in some instances heavier, renders the liability to palpebral spasm more frequent.

In these days of local anæsthesia by cocaine, &c., for performance of eye operations, during which the patient is usually fully cognizant of, and often actually able to witness, any manipulation on the part of the surgeon, the essential features of a thoroughly efficient and reliable eye speculum, to my mind, should consist in strength, combined with sufficient rigidity, be of light weight, and capable of allowing of easy and rapid application to, or withdrawal from, the eye in the event of palpebral spasm, or pressure on the eyeball being exerted by the patient, as so frequently happens during an operation. It should also be capable of alteration of its curve, for adaptation to the natural contour of any human face.

All these matters have been carefully gone into by me, and after many experiments, trials, and alterations, I think I have at last been able to devise an instrument for this purpose, which embodies all these features

The chief advantages claimed for my instrument are the following—

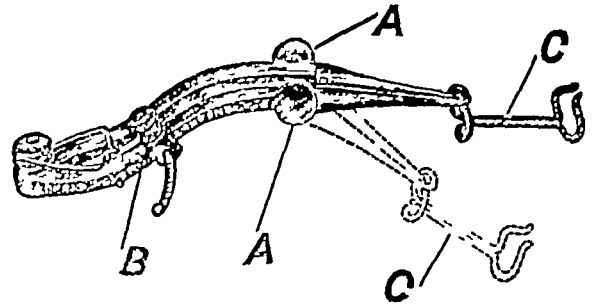


FIG. 1

1 That it is made of the thinnest tempered wire compatible with rigidity, thereby making the spring of the instrument much more pliable, which latter, in consequence, is of light weight.

2 That it allows of considerable alteration of its general curve to suit the contour of any human face, in which position it can be readily fixed by adjustment of the screws (*vide A, A*, figs 1 & 2), the heads of which latter are cupped,

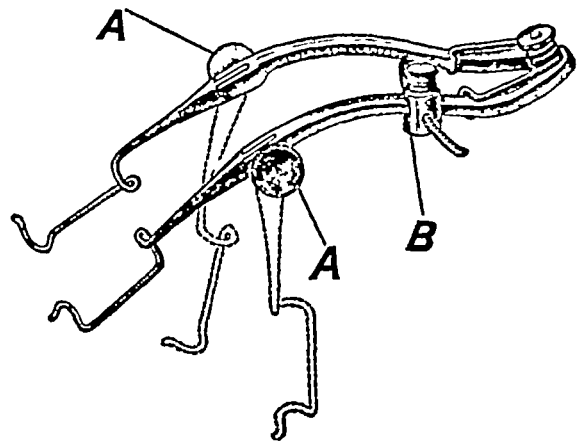


Fig 2

and of sufficient size, as to admit of a thorough grip of the speculum by the fingers during manipulation, thereby allowing of free and unfettered use of instruments from the side of the face between the eyelids, as is necessary in the performance of the operation for extraction of the lens for cataract, &c.

The threads of the screws (*A, A*) have been so cut as to work in opposite directions, this is an important detail and allows of the speculum being fixed at, or altered to, any required angle after its actual insertion between the eyelids, without causing any discomfort to the patient, or difficulty to the surgeon.

3 That it allows of absolutely complete closure, to the thickness of only one wire's breadth, by the telescoping of one prong (the portion which actually catches and supports the eyelid) into the other (*vide C*, fig 1), thereby allowing of instant removal from the eyelids, by simply compressing the limbs of the instrument at the buttons *A, A* (fig 1). This important feature in the instrument is its chief virtue and

one of the greatest value in the event of a nervous patient straining after the extraction of the lens in cataract operations, or when extrusion of the vitreous is feared, as the pressure can be instantaneously relaxed by adopting the abovementioned manœuvre, with the result, that the speculum, of its own accord, falls out at once from between the eyelids. To fully appreciate this, a glance at the two accompanying drawings (figs 1 & 3) will at once show the marked difference that exists, when closed, between the instrument devised by me (fig 1), and the ordinary speculum used (fig 3), as the

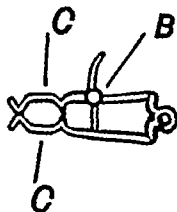


Fig 3

former requires no manipulation of the eyelids prior to withdrawal, which is essential in the case of the latter.

4 The natural curve given to the instrument has been arrived at as the result of a number of experiments made by me on the living subject, and that depicted in figure No 2 is the one I find, which is adaptable to the faces of most ordinary adult individuals, this, however, is also capable of further alteration, if necessary, to any angle required, even to a right angle (*vide* fig 2) by adjustment of the buttons A, A, which are in reality screws, for fixing the limbs of the instrument at any angle, as well as for the purpose of admitting of a reliable grip of the speculum to prevent any chance of slipping during manipulation between the eyelids, in the performance of operations on the eye.

5 The screw with rack (*vide* B, figs 1, 2, & 3) for regulating the extent of the opening of the speculum when within the eyelids, has been placed as far back as possible at the lower extremity of this instrument, and made purposely of small dimensions (more so than is usually the case with the ordinary eye speculum), so that it can in no way interfere with the free passage of instruments, from the side of the face between its limbs during the performance of cataract or other operations.

This instrument has, under my direction, been skilfully and accurately constructed by Messrs Arnold & Son, Surgical Instrument Makers, of West Smithfield, London, who are the sole patentees and manufacturers of it in the United Kingdom, and from whom only it is obtainable.

CATARACT OPERATIONS

By R K GUPTA, LMS, OS

ASST SURGEON,

Madhubani

WHILE I have been in charge of dispensaries at Barrackpore, Behal, and Madhubani, I have performed 402 operations for cataract. Of these

330 were in males and the rest in female patients. The senile cataracts were 372, and the immature 29, of the total number 384 were returned as successful and 18 as failures, a success percentage of 95.5. As regards age, 108 were under 45 and the rest over that age, except 1 in a boy aged 16 in whom cataract seemed to supervene after 'fever', both eyes were operated upon with good result. Two successful cases were in lepers, and 1 in a diabetic gentleman. In one case the patient, over 80 years, was a 'coucher' and had practised for long in Behal. In many cases where both eyes were affected the two operations were done at the one time.

All patients were bathed and washed before operation, and the eye had a drop of atropine and was washed with boric lotion. Cocaine was the anæsthetic used (gr xvi to 1 oz water). In many cases it seemed as if the patient felt the cutting of the iris.

All instruments are dipped in hot water and placed in boric lotion. The incision was at the sclero-corneal junction, and in every case a large incision was made. The capsule was opened with a cystotome. Recently I seldom do an iridectomy.

The chief complications met with were, escape of vitreous, a too short incision, a prick of the iris with the knife, which led to bleeding, vascular conjunctiva, over-sensitiveness of the conjunctiva (not rendered anæsthetic by cocaine), rapid prolapse of iris, adhesions of the lens.

I always use atropine after extraction, in one case only did I see a patient suffer from the effects of atropine poisoning.

CATARACT NOTES FROM JUBBALPORE

By RAJ S. N. BARAT, BAHADUR, M.B.,

ASST SURGEON

In the Victoria Hospital, Jubbulpore, C. P., 527 cataract operations have been done in the past five years, with 94 per cent of success. The staple food of the people is wheat, all castes produced cases. Simple extraction without iridectomy was done in 90 per cent of the cases. The incision was corneal, $\frac{1}{4}$ of cornea, dilatation of the pupil was secured beforehand. Soap-water and 1 in 10,000 corrosive sublimate was used, the eye and eyelids were well douched, and operators' hands were washed on 1 in 500 perchloride. The instruments, except the knife, are dipped into boiling water, the knife-blade is dipped in alcohol, and all kept in boric lotion. Freshly prepared cocaine is used, after the operation is over the eye is douched in boric lotion, and finely powdered iodoform dusted over the lid fissure. A pad of antiseptic wool is used, and both eyes are bandaged for the first few days. The wound is not disturbed for as long as possible. The chief complications met with

have been, (1) hæmorrhage into anterior chamber, (2) loss of vitreous, (3) displacement of lens, (4) premature escape of aqueous humour. To prevent loss of vitreous undue pressure must be avoided, and the speculum removed, and the incision is made and the capsule lacerated, after that the action of the lids should be controlled by the finger and thumb. A 2 per cent solution of eserine is used in all cases after operation.

Results—Cases are considered good when the patient can, with glasses, read anything between 1 and 14 Jaeger and 6-18 Snellen. Spectacles are usually provided.

The whole operation is done with the knife only, no fixation forceps or speculum are used. The patients are made to sit in a chair. I look upon irrigation of the anterior chamber as risky and unnecessary.

CATARACT OPERATION PROCEDURE AT BHAGALPUR

By JOGENDRA NATH GHOSH,
ASST SURGEON

CASES are selected to some extent, if the lens is ripe the operation is done at once, if not ripe, it is postponed, if the retina is not sensitive to light operation is refused. Before operation atropine is instilled so as to dilate the pupil, the eyelashes are cut, and the eye thoroughly cleansed. Cocaine only is used as an anæsthetic. All instruments are boiled before being put in boric lotion.

Operation—The linear flap method is adopted. We used to do an iridectomy always. But it was found that the *hakims* who "couch" eyes in the bazar contrast, to their own advantage, the round pupil left by "couching" with the keyhole pupil after iridectomy, so we resorted to the operation without an iridectomy making the incision at some distance from the periphery, through the transparent cornea. Opening the capsule is done either with the knife in making the incision, or by the cysto-tome. The lens is gently expressed, and the iris replaced by a kneading movement on the eyeball. The eye operated on is bandaged and not usually removed for 72 hours. We do not operate on immature cataracts.

A CASE OF TOBACCO AMBLYOPIA PRESENTING UNUSUAL DEFECTS IN THE VISUAL FIELDS

AND

A CASE OF OPTIC ATROPHY COMPLICATING BERI BERI

By F. O'KINEALY,

CAPTAIN, I.M.S.,

Presidency General Hospital, Calcutta

Case I—Tobacco Amblyopia—An Eurasian male, æt 38, clerk, unmarried, was admitted for defective vision on the 25th February 1901.

History—About fifteen years ago the patient suffered from a mild attack of syphilis, and two years before his present trouble was subjected to mental worry for some time.

He has been a heavy smoker for years, consuming on an average about 3 pounds of tobacco a month, represented by 250 strong Burmah cheroots and half a pound of American tobacco of medium strength. He drinks in moderation, about three quarts of spirits monthly.

In March 1900 his vision first began to fail while engaged in an excessive amount of clerical work, during which he smoked more than usual. The first symptoms noticed were "red spots" before the eyes, accompanied by lachrymation, haziness of vision and pain. His sight improved for about three months with the aid of glasses, but gradually relapsed till by the middle of November 1900 he could not read print, though still able to decipher manuscript. Since then his vision has been slowly deteriorating, though he has lately diminished his smoking.

Beyond "cataract" from which his father is said to be suffering, and the death of a sister from supposed "kidney disease," there is nothing suggestive of ocular troubles in his family history.

Condition on admission—The patient looks healthy, and no abnormality, other than his visual defect, can be discovered.

Ophthalmic examination—Eyelids and extrinsic muscles healthy, and moving normally on both sides. T.N.

Conjunctivæ, corneæ and anterior chambers natural. Aqueous clear.

Irides healthy, pupils round, equal, and reacting normally to light and accommodation.

Ophthalmoscopically, media clear, optic discs healthy, and fundi normal.

V = $\frac{1}{2}$ imperfectly, and Jaeger 18 with difficulty in each eye, not improved, no astigmatism. Vision better in half lights. And red object on a green ground appears black when seen at a distance. No apparent congenital colour blindness.

The Visual Fields, examined with test objects 1 cm square, shew the following defects—The Right Field (Fig. I) is contracted outwards for white, red and blue, as well as below for the two latter colours. Green is not distinguished as such anywhere in the field, except so occasionally and doubtfully at the fixation point that the area cannot be mapped out, it is called "yellow" or "white" or "red" indiscriminately. Yellow is also indistinguishable and is described as "light red" throughout the field. There are two scotomata for red and blue, the larger fan shaped and situated in the upper and inner quadrant, the smaller extending from around the fixation point outwards beyond the blind spot to 20°, and lying chiefly in the lower and outer quadrant. Over these areas the above colours are seen as "dark red" and "dark blue" respectively, while between them in the upper and inner quadrant is a small strip of the field, about 5° wide, in which there is no defect. In the larger scotoma the defect for blue is the greater by 5° upward and 10° inwards, that for red extending 5° further downwards, while in the smaller scotoma the defect for red is slightly larger upwards, and that for blue extends somewhat further inwards.

In the Left Field (Fig. II) there is contraction for white outwards, and in all meridians for red and blue. Neither green nor yellow can be distinguished as such.

anywhere in the field, the former being called "white" or "yellow," and the latter "light red." There is a scotoma for red and blue extending from around the fixation point outwards beyond the blind spot to 30°, in which areas these colours are seen as "dark red" and "dark blue" respectively, becoming darker towards the fixation point. The defect for blue is the greater by 5° upwards.

The treatment consisted of absolute abstinence from all tobacco and alcohol, combined with the administration of Potassium Iodide, Mercury and Strychnine, the latter drug being given hypodermically as well as by the mouth.

He improved considerably, and at the time of his discharge from hospital (April 17th, 1901), his visual condition was as follows —

V R = $\frac{5}{6}$ imperfectly, Hm + 5 D = $\frac{5}{6}$
Jaeger 16 easily,
C + 2.75 D Sph = Jaeger 1 @ 30.5 cm with difficulty
V. L = $\frac{5}{6}$ imperfectly Hm + 5 D = $\frac{5}{6}$ with difficulty
Jaeger 16 easily,
C + 3 D Sph = Jaeger 1 @ 30.5 cm with difficulty
V B C = $\frac{5}{6}$ imperfectly, Hm + 5 D not improved
Jaeger 12,
C + 2.75 D Sph = Jaeger 1 @ 30.5 cm fairly
L + 3 D Sph

Both Visual Fields (Figs III and IV) have improved. The limits for white are still contracted outwards, but the boundaries for colours more nearly approach the normal, and the scotomata for red and blue have disappeared. Yellow is still indistinguishable as such and is called "light red" throughout both fields, but the perception of green has returned in a marked degree, (Compare with Figs I and II).

In the Right Field (Fig III) there are two fan shaped scotomata for green, the larger extending outwards, upwards and slightly inwards from within 10° of the fixation point, the smaller passing downwards from the fixation point. Over both these areas green is indistinguishable and is called "yellow" or "white." The boundary of the field for green in the lower and outer quadrant forms an entering angle, which dips in between the scotomata to 10° from the fixation point, just below the blind spot.

In the Left Field (Fig IV) there is a small wedge shaped scotoma for green, commencing 10° from the fixation point and extending downwards and outwards immediately below the blind spot, within which the colour is described as "white."

Case II—Beri beri, Optic Atrophy—
A Goanese deck-boy, *et* 45, was admitted for beri-beri on the 22nd November 1900.

History—About two months previously while in China, he first noticed "tingling" in his extremities accompanied by "a feeling of cold," and from that time gradually developed general swelling of the whole body, with breathlessness and loss of power to such an extent that he became bed-ridden.

There is no history of syphilis or alcohol.

Condition on admission—The patient looked extremely ill and was quite helpless. Tongue clean and bowels regular. Temperature subnormal. Pulse 104 lying and 116 sitting. Dyspnoea marked. There was considerable loss of power in the extremities, with complete absence of the patella reflexes and ankle drop on both sides, but no definite sensory disturbances. Anasarca was marked and involved the whole body with the exception of the genitals. Ascites was present, but there was no effusion into the pleura or pericardium. There were signs of oedema of both lungs at their bases posteriorly, and a cardiac systolic murmur was audible over the tricuspid area. The liver

and spleen were normal. The urine was scanty, acid, sp g 1020, and contained a trace of albumen.

He gradually improved, and after some time was able to get about. It was then noticed that his sight was defective, but the patient was so lacking in intelligence, that no satisfactory information regarding his eyes could be elicited. There never had been any evidences of external ocular trouble, nor could any be discovered on further examination.

The patient being quite illiterate, his sight was tested by means of dots¹ and shewed V = $\frac{5}{6}$ in each eye, not improved.

Ophthalmoscopic examination—

Right Eye—Media clear. There is marked pallor of the whole optic disc, especially of the temporal half which is bluish white in appearance. The lamina cribrosa is clearly visible. The edge of the disc is sharply defined, irregular, and surrounded by a ring of pigment which in places encroaches on its surface. There is a choroidal crescent immediately external to the pigment at the temporal margin of the disc. The retinal arteries are diminished in calibre and the main trunks show a well marked light streak in places. A small arterial twig passing downwards and outwards from the disc, shows distinct thickening of its walls with marked diminution of the blood column. About 3 d d upwards and outwards from the disc and parallel to its margin, is a group of four small circular yellowish soft edged choroidal patches, which are crossed by branches of the ascending temporal artery and vein.

Left Eye—Media clear. The condition of the optic disc is similar to that in the right eye, the edge is less irregular, and the deposit of pigment is confined to the temporal margin, where there is also a choroidal crescent. The diminution in the calibre of the retinal arteries is less marked, and the light streak is absent. About $\frac{1}{2}$ d d downwards and inwards from the disc is a single circular choroidal patch, similar to those described in the right eye.

The visual fields could not be taken owing to the patient's want of intelligence.

Remarks—The unusual features of the first case are the contraction of the visual fields, especially for red and blue, together with the absence of green and yellow vision, and the scotomata for blue. As a rule in tobacco amblyopia the peripheral boundaries of the visual field are normal, and there is a central scotoma for red and green. Cases of this disease are however mentioned by De Schweinitz², in which a scotoma for blue has been described, but the defect is said to be rare. He also states that the entire field for red and for green may be abolished, while other cases are quoted in which a central scotoma for yellow has been found, with or without limitation of the colour-field.

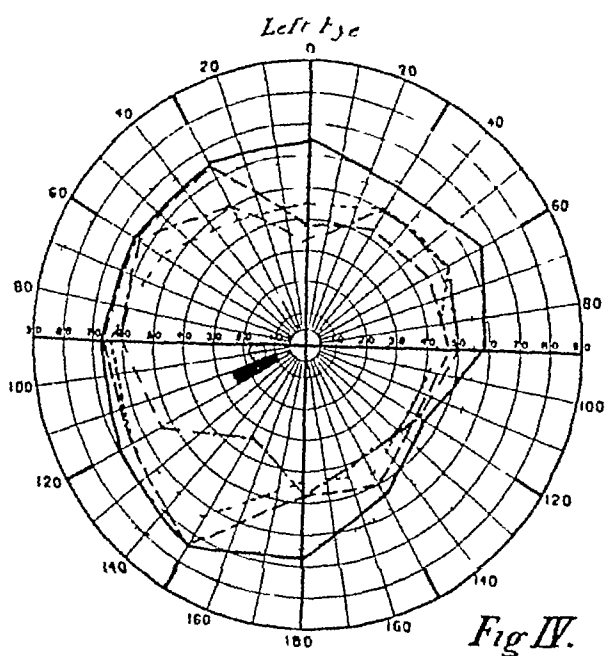
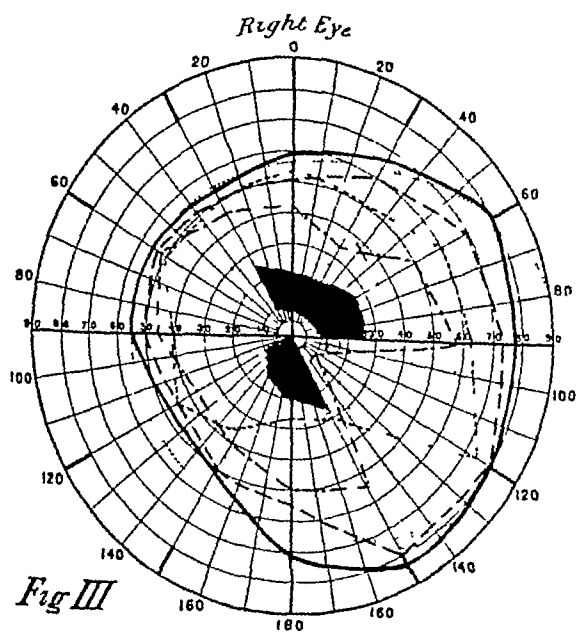
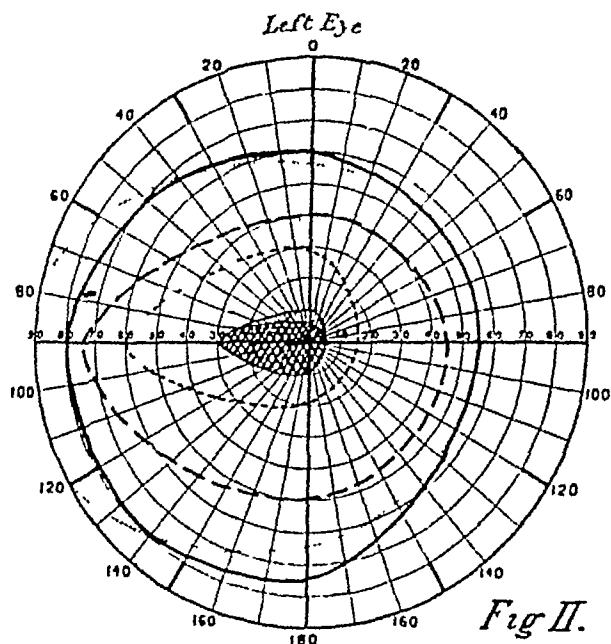
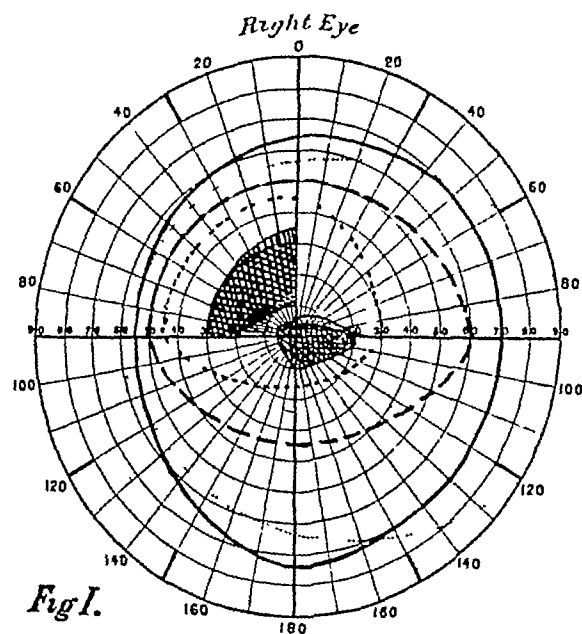
In the present case there was no evidence of any non-toxic red-green blindness, nor could any cause other than tobacco be found for the amblyopia. In the earlier fields (Figs I and II) the paracentral form of the scotoma extending from the fixation point to the blind spot, which is usually found in tobacco cases, is well shown, while the fan-shaped defect in the right field (Fig I) is suggestive of the remains of a "break-

¹ Internationale Sehproben by Dr M. Burghardt, with 5 Plates, Otto Enslin, Berlin, 1893. These test-dots being graduated for various distances, will be found useful for examining the vision of illiterate natives. They are obtainable from Messrs. Lawrence and Mayo, Calcutta.

² The Toxic Amblyopias.

A CASE OF TOBACCO AMBLYOPIA PRESENTING UNUSUAL DEFECTS IN THE VISUAL FIELDS

By F. O'KINEALY.



Fields.

White	—
Red
Blue	----
Green	— · — · —

Scotomata.

Red and Blue	
Red only	
Blue only	
Green	

ing through" of the scotoma, which sometimes occurs in these cases

In the later fields (Figs III and IV) the situation of the scotomata is unusual. In the case of the right eye however (Fig III), the previous occurrence of "breaking through" is suggested by the proximity which exists between the scotomata, and the entering angle formed by the periphery of the field for green.

In the left eye (Fig IV) the scotoma is in close proximity to the blind spot, in the neighbourhood of which the colour defect is said to begin sometimes.

The crossing of the boundaries for colours occurring in the later fields, is probably due to the retinal asthenopia which was present at the time of examination.

The abolition of the field for yellow is exceptional, but the improvement that has already taken place in the perception of the other colours, encourages hopes of its restoration.

With regard to the second case, it may be noted that Manson³ looks upon implication of the nerves of sight as very exceptional in

ber-ber. Knies⁴ mentions that the occurrence of optic atrophy in this disease has been reported by Lauencão and by Kessler. The latter observer also noticed that contraction and insufficient filling of the retinal arteries, with white sheaths around the arteries and veins, accompanied atrophy of the papilla.

In the present case the optic atrophy is attributable to the ber-ber, but the origin of the choroidal changes is doubtful.

Supplementary Note on Case I—Since the above was written the patient has presented himself for further examination, the result of which is as follows—

May 5th, 1901—Distant vision unaltered
Near vision improved

R = Jaeger 10 imperfectly,
c + 2 75 D Sph = Jaeger 1 fairly

L = Jaeger 12 imperfectly,
c + 3 D Sph = Jaeger 1 fairly

B E = Jaeger 10 with difficulty,
R + 2 75 D Sph
c L + 3 D Sph = Jaeger 1 easily

Both fields of vision remain somewhat contracted especially outwards, but the scotomata for green have disappeared, while the perception of yellow has returned at the fixation point, extending 10° outwards and 5° upwards from it in the right eye, and 5° outwards in the left. There is still a certain amount of retinal asthenopia.

³ Allbutt's System of Medicine, Vol. II

⁴ The Eye in General Diseases

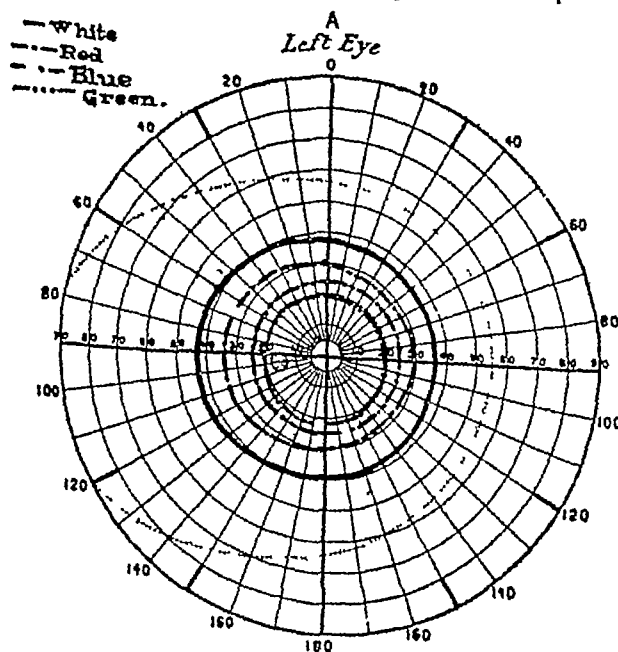
FIELD OF VISION IN A CASE OF HYSTERIA,

By U N BRAMACHARI, M A, M B,

House Physician, Medical College, Calcutta

PATIENT, named Miss R—, at 22, was admitted on 19th April 1900, into Lieutenant-Colonel Bomford's wards in the Medical College Hospital,

admission into hospital she began to suffer from inability to protrude the tongue, clonus hysteri-
cus, aphonia, cramps in the toes and fingers, and



Calcutta, for the treatment of sleeplessness, anorexia and pain in front of the chest, all of which came on after her brother's illness. Shortly after

tenderness in the left iliac region. She had no fits in hospital. Examination for sensation showed bilateral anaesthesia over the face, forearms,

abdomen and the legs. The ophthalmoscopic examination of the eyes presented nothing abnormal in either fundus. The visual fields taken on 23rd April 1900, are represented in the diagrams.

It will be seen that the visual fields presented the following characters—

(1) Concentric narrowing of the field of vision in both the eyes

(2) The boundary of the red was more towards the periphery than that of the blue in the visual field of the left eye

(3) Crossing of the boundaries of the red and blue in the visual field of the right eye though in most of the meridians the blue was inside the red

(4) Central vision was intact in both the eyes

The characteristic feature of the visual field in hysteria is its concentric contraction, with more or less reversion or transposition of the colour fields. This

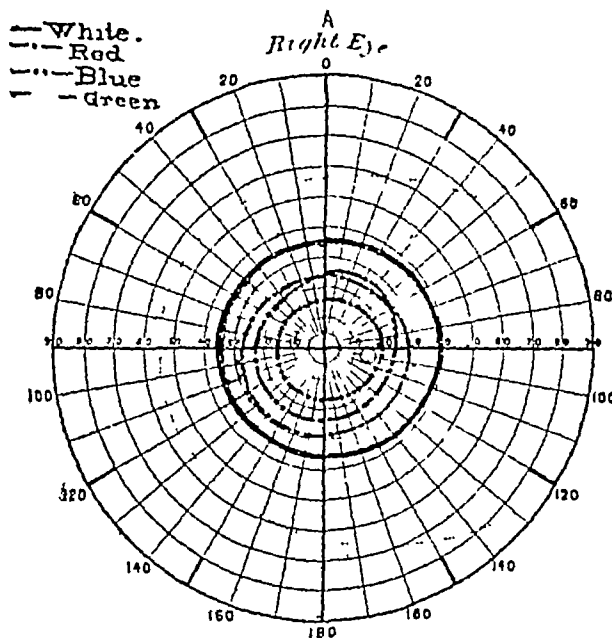
either through fatigue, or effort at fixation, and also by a convulsive seizure, just previous to examination which may even lead to a temporary amaurosis. Parinaud has shown that by puncturing the skin, the extent of the visual field is increased, until in certain cases it is rendered normal. Sometimes, again, when the amblyopia is unilateral, cutaneous excitation produces a transfer, the narrowing of the visual field disappearing in the affected eye and developing in the healthy one.¹ Dyschromatopsia may be present in hysteria, but it is quite characteristic. Green and blue are the colours that disappears first and red disappears last.

Hysteria may also require to be diagnosed from insular sclerosis, and here too the visual field may be of some help. Regular concentric contraction of the visual field is very rarely found in insular sclerosis. Uthoof quoted by Marie describes the following changes in the visual field in insular sclerosis:

(1) Central scotoma without change in the periphery of the visual field

(2) Central scotoma associated with contraction of the periphery of the visual field

(3) Irregular peripheral contraction of the visual field, central vision being normal



condition of concentric contraction of the visual field was described by Von Graefe, though not quite correctly as anasthesia retinae. In hysteria the boundaries for the different colours are often abnormal, red having a wider boundary than blue, or the boundaries for red and blue cross each other. Sometimes the zone existing between the outer limit of the field for white and that for colours may, according to Buzzard and Head, be obliterated so that they are visible within the same limits as white. Sometimes, as has been pointed out by Parinaud in one of his diagrams,² red has even a wider boundary than white. On the other hand, it may be impossible to examine the colour fields at all in hysteria, all colours being styled dark or black. Sometimes again peripheral vision is entirely abolished, perception being limited only to central vision.

Forster has shown that if the fixation point is moved from the centre to the periphery, the field in each of the meridians is larger than when the object is moved from the periphery to the centre. The visual field in hysteria may diminish in size during examination,

(4) Very rarely concentric contraction of the visual field, the type resembling that of hysteria.

In insular sclerosis the zone between the outer limit of the field for white and the outer limit of the field for colour is maintained, unlike that of hysteria. Dyschromatopsia may also be present in insular sclerosis, but it resembled more the tabetic than the hysterical variety.

The contraction of the visual field in optic atrophy consists in a regular contraction, or in the form of a sector. Sometimes one half of the field is lost. Sometimes again there is an irregular scotoma in the middle of the field. There is frequently dyschromatopsia, green, red, yellow and finally blue, disappearing successively.³

The diagnosis of the hysterical field of vision from that of neurasthenia is often difficult to make. According to Loewenfeld concentric narrowing of the visual field, which is so frequent in hysteria, is not observed in typical neurasthenia, but this fact is

¹ System of Diseases of the Eye By Norris and Oliver, Vol IV

² Marie's Diseases of the Spinal Cord

³ Marie's Diseases of the Spinal Cord

⁴ Juler's Ophthalmic Science and Practice

not admitted by others. Thus Swanzy¹ describes concentric contraction being often present in neurasthenia. In neurasthenia there is often rapid exhaustion of the nervous visual apparatus during examination, so that there are frequent changes in the size of the visual field. This might also be present in hysteria. Sometimes, in neurasthenia, the field of vision narrows in a spiral direction during examination.

Hysterical amblyopia is generally easily diagnosed from that of the toxic type. In alcohol amblyopia, there is defective central vision, and a central scotoma for red and green. Sometimes colour defects occur in the peripheral visual field, and, very rarely, there is simply contraction of the colour-fields without central scotoma. In tobacco amblyopia the peripheral boundaries of the visual fields are normal, and in the centre of each visual field there is a colour scotoma for red and green, usually oval and stretching from the fixing point to the blind spot, the pointed end being towards the blind spot. In severe cases there is scotoma for blue and yellow, and sometimes there are small absolute defects, generally at the nuclear spot.³ In the dyschromatopsia of both of these conditions, the scotoma develops from the centre extending towards the periphery. Sometimes, however, in hysteria there may be all the symptoms of toxic amblyopia.

The diagnosis of the hysterical field of vision from that of traumatic neurosis is often difficult to make. According to Appenhem, unilateral or bilateral contraction of the visual field is its most important symptom. However, the relative position of the colour boundaries is seldom altered as is often the case in hysteria.

The field of vision in epilepsy resembles that of hysteria, but in it there is no transposition or reversion of the colour. Besides the contraction, as Charcot points out is only temporary, though Oliver⁴ states it might sometimes exist as a chronic condition.

FURTHER EXPERIMENTS IN CONNECTION WITH THE CAUSE OF BERI-BERI

By E R ROST,

CAPTAIN, I.M.S.,

General Hospital, Rangoon

In continuation of a report on the cause of Beri-Beri, published in the *Indian Medical Gazette* of December 1900, further experiments have been carried out, especially as regards the disease in fowls.

A disease in fowls may be produced by —

(i) feeding fowls on fermenting rice obtained from the jars in the rice liquor shops,

¹ Swanzy's Diseases of the Eye

² Knies on the Eye in General Diseases

³ System of Diseases of the Eye By Norris and Oliver, Vol IV

⁴ *Journal of the American Medical Association*, Sept 26, 1891

(ii) feeding fowls on rice obtained from the lower bags in damp rice godowns, which is diseased by a thready clammy growth of organisms, holding several grains together

(iii) injecting fowls intra peritoneally with blood from cases of beri-beri, with and without œdema,

(iv) injecting fowls intra peritoneally with rice liquor from shops in the bazaar

A stock of healthy birds was obtained from the bazaar and a large airy henhouse of corrugated iron and wire netting with partitions erected

Six birds were fed on fermenting rice obtained from Pegu jars in which rice water liquor is made in liquor shops in the bazaar

The birds were all healthy and had an average weight of 23 ounces, they were kept in one cage away from contact with other birds

They fed well on the fermenting rice, which was supplied plentifully. They became rapidly weak, pale, listless, with drooping wings, and lost flesh rapidly, so that on the 5th day their average weight had fallen to 18 ounces

The birds commenced to loose their feathers at the front of the neck, and then on the back. Cockscombs became blue and covered with white patches

They stood in a crouched up position, appeared dazed, listless, though ate their food and scrambled to peck in the basin, they were becoming cyanosed and appeared to balance themselves in walking with difficulty

They had diarrhoea. On the 7th day, four of them could not stand up or fly, they were cyanosed, had lost most of their feathers and gasped for air, these died in the evening

The remaining two were killed the next morning, in a dying condition

Up to the 7th day they had partaken freely of the rice, the average fall in weight had been from 23 ounces to 15½ ounces (See Weight Chart). *Post mortem* wasting was found of all tissues alike, nothing of note was found in any of the organs. In the heart blood was found the angular organisms, which multiplied after incubation in pipettes

II In the second series, six healthy fowls were taken and isolated in a compartment, they were fed on the dry diseased rice obtained from the lower bags in a damp rice godown of a rice liquor shop

The chief difficulty here was to obtain the diseased rice, which was therefore not administered to them regularly. The process in this series was less acute, probably, on account of intervals in which the diseased rice could not be obtained and probably on account of the organism being assimilated in the dry state

It will, however, be seen by the accompanying weight chart that all the weights fell after the first week, from an average of 25 ounces to 21 ounces. Three of the birds died on the 43rd, 57th and 69th days, the symptoms being loss of flesh, loss of feathers, anæmia, cyanism, inability to stand up or fly, diarrhoea, as in the first series of cases. Besides these symptoms they appeared to get anæsthesia of the back, as some of the fowls pecked ulcers into the backs of others, without apparently painning them

Post mortem — Nothing of note was found, the angular organisms were found in the heart blood

The remaining three fowls died on the 90th, 109th and 111 days

There had been an interval of some weeks in which the diseased rice was not administered to these birds, during which time they began to increase in weight to above their starting weight. The weights however rapidly fell on re-administration of the rice

III Six healthy fowls were injected intra-peritoneally with blood from six cases of beri-beri without

oedema, and six were injected intra-peritoneally with blood from six cases of beri beri with oedema.

The blood was obtained by inserting sterile glass pipettes into the median cephalic vein, and allowing the blood to flow through, afterwards sealing the ends of the pipettes. The fowl's abdomen was then exposed, and the two ends of the pipettes broken off, and the glass run into the abdomen of the bird, the serum ran into the peritoneal cavity, by gravity.

The birds were well fed, rice being avoided, and were kept isolated in a large airy compartment of the bird house.

Of these twelve birds, six died and six eventually recovered.

Of the six that died, three had been injected from three cases of beri beri with oedema, and three from cases of beri beri without oedema.

They died on the 15th, 22nd, 65th, 74th, 82nd and 90th days after injection.

The first three to die fell rapidly in weight, as the accompanying weight chart shows the last three gained in weight, but eventually fell in weight and died rapidly.

The symptoms of the disease in these cases were most marked and exactly like those in the two former series.

Of the six birds that recovered, the weights went up rapidly to double their original weight and symptoms such as, anaemia, diarrhoea, loss of feathers, drooping of the wings, listlessness have passed off.

The organism was found in the heart blood of every case that died from the disease.

IV Three healthy birds were injected intra peritoneally with rice water liquor. Their average weight was 41.5 ounces, and this fell to 31 ounces in ten days, the birds began to have the same symptoms as those in the preceding series. On the 31st day they however began to increase in weight till their average reached 45 ounces on the 59th day. On the 68th day, I re-injected them intra peritoneally with 20 cc rice water liquor as before. Their average weight fell to 40.5 ounces in a week, they have drooping of the wings, weakness, anaemia, loss of feathers. These birds are still under observation.

The above series of cases show an identical disease produced in different ways, and clearly show the connection between beri-beri and a disease in rice. Of the nature of the organism and of its presence in the blood in all cases of the disease, I have verified by further observation, and have extracted blood from the veins of beri-beri cases by the pipette method over a hundred times, the pipettes were all made just before use, so that their sterilization is certain.

In my former report I omitted to mention that the size of the organism was about that of the tubercle bacillus, and so it can easily be distinguished from subtilus, with which one is likely to be contaminated, on account of its presence frequently on rice.

The organism is most often seen in the angular condition, and least often seen in the sporulating condition.

Experiments were made to ascertain how the organism agglutinates, and it was found that the blood serum of a fowl which had recovered after injection with beri-beri agglutinated the bacilli, it was also found that beri-beri organisms in rice-liquor were agglutinated by the serum. Sedimentation experiments were

tried, and the sediments afterwards examined under the microscope, this is necessary as a routine in sedimentation tests, as there are many fallacies, such as precipitates caused by foreign matter, white corpuscles or contaminations by fungi or other bacilli. The most definite agglutination took place about four hours after a dilution of 1 in 80. Equal parts of beri-beri serum and fowls' serum showed only a slight reaction after eight hours. A dilution of 1 in 20 gave a definite reaction in eight hours, a dilution of 1 in 40 a definite reaction in four hours.

AN ATTEMPT TO RECONCILE THE VARIOUS VIEWS REGARDING MALIG- NANT TERTIAN FEVER

By ANDREW BUCHANAN, M.A., M.D.,

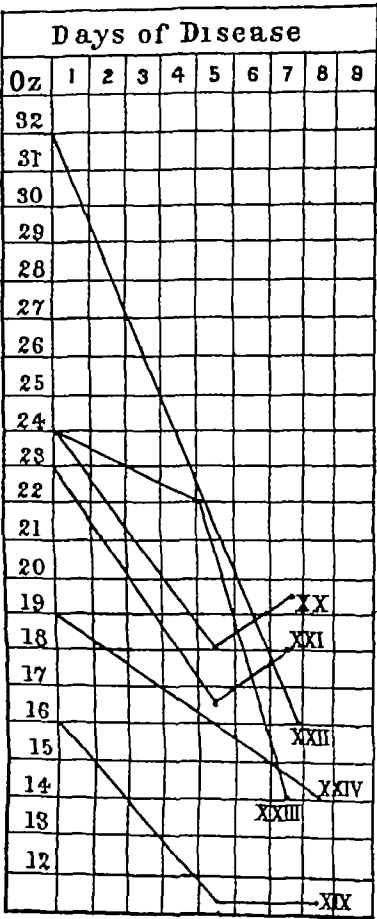
MAJOR, I.M.S.,

Civil Surgeon, Nagpur

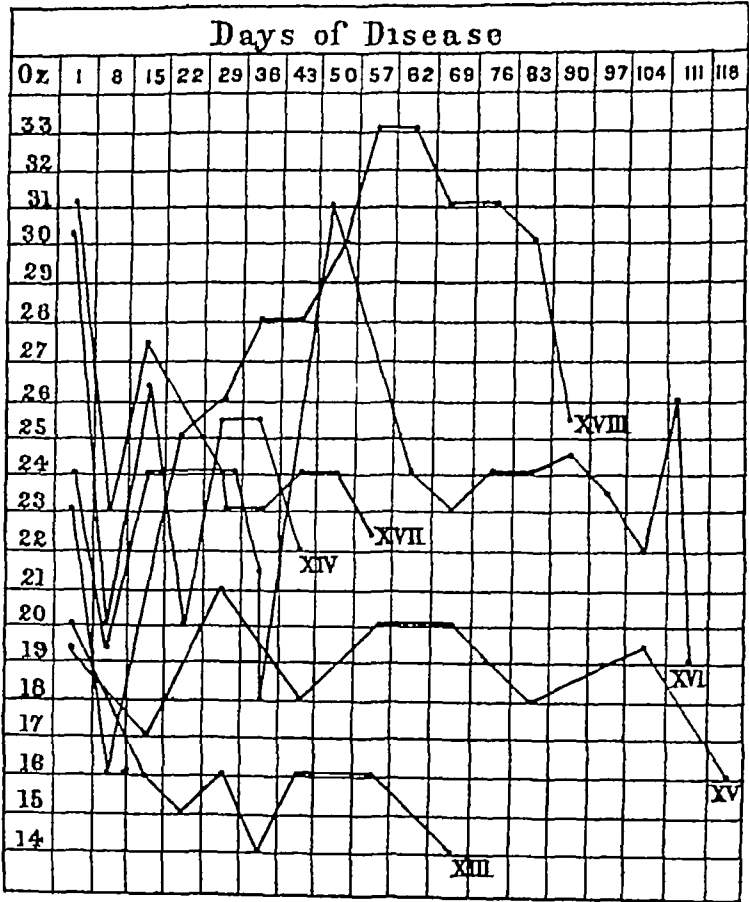
THE literature on Malignant Tertian fever is rather confusing, for we find authors making statements which are widely at variance. It may be useful to consider whether a knowledge of the fact that there are more or less definite periods during which particular forms of parasites are seen, will help us to reconcile what appear to be directly contradictory statements. Some extracts from the writings of various authors will be given below in order to show to what extent they differ. Special prominence will be given to the views of Drs Stephens and Christophers who have recently written a Report on "The Malarial Infection of Native Children" in Lagos, on the West Coast of Africa, because it would seem that their observations to a large extent substantiate what we have observed here, and because the conclusions which they have drawn and the theories they have advanced do not appear to be justified by the observations they have recorded. Their paper is published in the Royal Society's "Reports to the Malarial Committee," third series. Unfortunately in the tables which are published with their paper they do not make any distinction between the crescent and the flagellar bodies but classify them all together under the heading "gametes," and they do not give charts of the cases nor mention the temperatures of those in which "Gametes" were found, nor say whether there was any difference in the temperatures when flagellar bodies were found. But they do mention at page 9 that "contrary to our expectation there is a sequence in the occurrence of parasites." Now everybody knows, and Manson and Celli have distinctly pointed out, that there is a sequence from Ring forms to Crescents, and Stephens and Christophers were evidently aware of this for they say in an earlier part of their paper—"While in European blood, subsequent to an attack of fever

FURTHER EXPERIMENTS IN CONNECTION WITH THE CAUSE OF BERI BERI

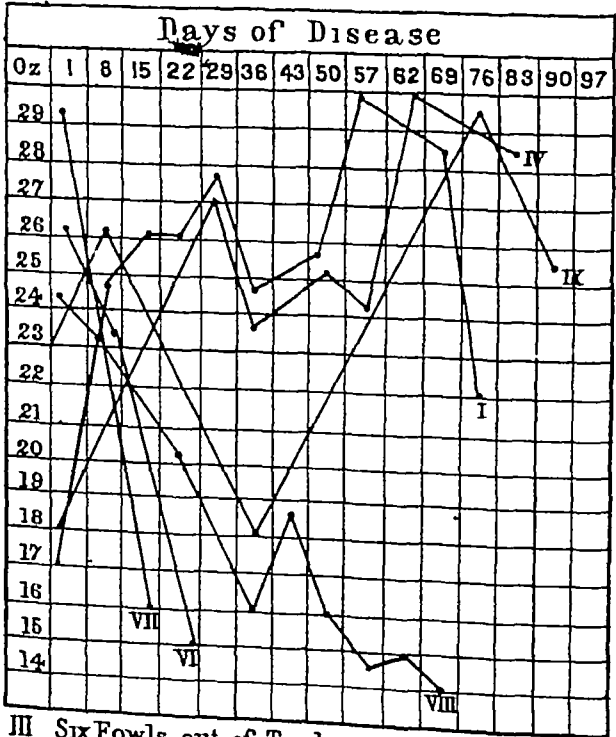
By E. R. ROST.



I Six Fowls Fed on Fermenting Rice



II Six Fowls Fed on Diseased Rice



III Six Fowls out of Twelve injected Intra-peritoneally with Blood from Beri-Beri Cases

it is the crescentic form of the gamete that is encountered, &c" What they evidently meant to convey is that there is an "alternation," for they quote cases to show that they sometimes found asexual parasites, followed by gametes, and others in which they found gametes followed by asexual forms. The cases that we have met with here have been divided into five groups, viz —

- (1) Those showing the primary fever without flagellar fever
- (2) Those showing the primary fever and the flagellar fever
- (3) Those showing the flagellar fever only—they are cases that had not come to hospital during the primary fever
- (4) Those showing true relapses, that is, cases showing the primary fever, the flagellar fever, and afterwards a true relapse in which ring forms are again found
- (5) Irregular cases in which many ring forms and flagellar bodies are found at the same time

The cases recorded by Stephens and Christophers in their tables would fit into these groups fairly well

For instance their case 9 "Many parasites in the 2nd half of July only one gamete seen in August" (10th) would probably fit in with our group I, their case No VII of Table II showing 5 asexual parasites on the 4th of August and 7 gametes on the 12th August would probably fit in with our group 4

Of course, as said above, they have not given the temperature charts, and they have not made any distinction between the crescents and flagellar bodies in their tables, but the results of the blood examinations show such a strong resemblance to those which we have found here that it would seem as if there is a great similarity between the malignant tertian of Lagos and the malignant tertian which we find here

When we come to consider the question whether the crescent changes into the flagellar body before the blood is drawn from the body we find the opinions of writers as follows —

Manson at page 13 says —

"It is of importance to bear in mind that they (flagellated bodies) are never seen in newly drawn blood, and that they come into view only after the slide has been mounted for some time—10 to 30 minutes"

Ross—West African Report says —

"They remain unchanged within the vertebrate hosts"

Christy—page 3 —

"The fact that the flagellated body did not come into existence until the blood left the vessels and was outside the human body, &c"

Celli—page 48 —

"In the human body they (crescents) appeared to be and in fact are sterile."

Manson is of opinion that flagella bodies are never seen in freshly drawn blood, and the authors mentioned above agree with him

Stephens and Christophers, however, at page 5 of the Report mentioned above say —

"It is here that Native blood presents many points of divergence from European blood—features that have hitherto not been recorded. While in European blood subsequent to an attack of fever it is the crescentic form of the gamete that is encountered, in Native blood while gametes are exceedingly common, yet the crescentic form is rare, the gametes assuming the spherical forms found in simple tertians and quartans. We are convinced on the contrary that the crescentic form is not an essential distinctive feature of the *æstivo-autumnal* parasite"

Stephens and Christophers having found what Manson, Ross and Celli say never occurs, proceed to give an explanation. Now there are two ways in which the difference in the observations might be explained—one that Native blood is different from European blood—the other that the specimens of blood may have been examined at different periods of the disease. Stephens and Christophers do not apparently take the latter into consideration without bringing forward any argument, or assigning any reason for the conclusion they have drawn, they say that there are many points of divergence between Native and European blood, and they do not make the suggestion that the difference in the observations may possibly be accounted for by the observations having been made at different stages of the attack

We have seen a good many cases of malaria in Natives of India and in Europeans, and the symptoms seem to be exactly the same in both, and, as far as we can judge from the descriptions given of the parasites by Manson and Celli, the parasites seen here and those seen in other parts of the world seem to be the same, excepting in some minor points which may possibly be due to differences in description. We have seen, however, that there is a period when more crescents are found than flagella bodies, and there is a period when the flagella bodies are more numerous than the crescents, and until Stephens and Christophers have examined a number of cases throughout their whole course, we must hesitate to accept their statement that the crescent does not occur in the *æstivo-autumnal* fever

The next question to consider is whether there is any connexion between the crescent body or flagellar body and relapses, and we may take relapse here to include secondary fever from whatever cause

Manson, page 66, says, "the crescent body does not cause fever" Celli, page 52, says, "so that Golgi erroneously believed that these crescents represented the germ of recurrent fevers" Stephens and Christophers, page 9 — "We cannot, in the present state of our knowledge, attribute any part to the gametes in the produc-

tion of relapses," but in the same page and a few lines above these writers say —

"So that it would appear as if there was a succession of gametes, in the same way as we have a succession of developments of asexual parasites leading to the ordinary febrile attacks of Europeans"

What is meant by this last paragraph is not clear. Do they believe that one gamete (crescent) produces another gamete without going through the regular stages of ring form, crescent, flagellate body? If so, they do not bring forward any arguments to support this view.

They have been puzzled by what they have seen, but it is perfectly clear that they have been examining cases during the flagellar fever period.

In Manson at page 66 we find —

"A Plehn states that during a period of two years' residence in Africa he only once saw the flagellated body"

And is it not curious that Stephens and Christophers should have found it so frequently?

We believe then that we have shown that many of the differences of opinion which exist at present will disappear when it is recognised that there are two fever periods in the malignant tertian, and if writers on the subject will take care to particularise what period of the fever they are describing.

A History of Hospital Practice.

SURGICAL CASES FROM THE SAMBHU NATH PUNDIT HOSPITAL, BHOWANIPUR, CALCUTTA.

By E HAROLD BROWN, M.D.,

MAJOR, I.M.S.,

Civil Surgeon, 24 Pergunnahs

(Concluded from page 180)

CASE VII — *Appendicitis Laparotomy, Recovery*

The patient, a weakly, old looking Muhammadan, who said his age was 40, came to the hospital on the 27th of June 1900, with a swelling low down in the right iliac fossa.

He could not give any definite history of his illness, but his friends who accompanied him said that he had been ill for more than a month, that he had had pain in the right side of the abdomen all the time, with a good deal of fever, and that he had grown much worse during the last week. Being so weak that he was unable to walk, and having exhausted the resources of the village quack, he had been brought to the hospital in the hope we could cure him.

I could not elicit the history of his health prior to the present illness, as the patient was not in a condition to give an account of himself. *Present state* Temperature, 101.6° F., pulse 110, small and weak, tongue dry, skin harsh, is evidently seriously ill. There is a distinct bulging of the abdominal wall in the right iliac region, the part is very tender and painful, there is distinct fluctuation, no hard mass can be felt.

The bowels have been irregular of late, with a tendency to looseness, especially for the last three days.

There being evidently a large collection of pus in the neighbourhood of the appendix, and the patient's condition being bad, I thought it advisable to operate at once, so placed the patient on the table, purified the parts and, employing the usual incision, under chloroform, gave exit to a large quantity of thin, very foetid pus on opening the peritoneum.

On passing in a finger I found a large, irregular abscess cavity, completely shut off from the cecum, the appendix could not be differentiated and, as the patient's condition contraindicated a prolonged operation, I was content to put in a tube and drain the abscess cavity.

The patient bore the operation exceedingly well, and made a very good recovery. He was kept in the hospital for seven weeks, during which time improvement was steady and continuous, and, when discharged, was perfectly well, and had gained weight considerably.

CASE VIII — *Appendicitis, Laparotomy, Death*

The patient, a very thin, puny, middle aged man, was admitted to the hospital on the 28th of June, a day after case No. VII, with a large swelling all over the right side of the abdomen.

There was a history of a long period of ill health, characterized by several attacks of pain, at intervals of a few weeks, accompanied by fever and disturbance of the bowels, four months ago, a hard lump appeared low down in the abdomen, this continued to increase steadily until it attained its present dimensions, and now the fever persisted day and night, there was constant pain, and the patient was very thin and weak.

Present condition — Temperature 102° F., pulse 136, very weak and small, tongue dry, general condition extremely bad, bowels loose, motions frequent, day and night.

The swelling extended from a point just above the umbilicus to the lowest part of the abdomen, was soft and fluctuating and appeared almost to be pointing. The abdominal walls were very thin, but no hard mass could be felt in the swelling. It was not a promising case, but I thought it right to give the patient the benefit of the only measure that might succeed in saving his life, so, having purified the part, performed the usual operation. On incising the peritoneum, which could not be differentiated from the anterior abdominal wall, there was a gush of extremely thin, greenish, horribly foetid pus, of which more than a pint escaped. There was a very large, irregular cavity, which was, apparently, completely shut off from the general cavity of the peritoneum, and I did not look for the appendix.

I put in a drainage tube and dressed the parts as usual. The patient was fairly well after the operation, and improved during that night and the following day, but, on the evening of the 29th, there were indications that he was worse, he slowly sank, and died on the 30th.

It will be seen that all the above five cases of appendicitis were seen late, each one had advanced to the stage of suppuration, a large cavity resulting which was completely shut off from the cecum, and, in every instance the pus was very foetid.

None of the patients were ideal ones for operation, yet a cure resulted in three, and two were temporarily relieved.

Although the appendix was undoubtedly the cause of the mischief in all the cases, it was never seen at the time of operation. In the circumstances it would have been unjustifiable to grope about in the abscess cavity in the hope of finding the offending body, for nature had succeeded in preventing extension of the mischief to the general cavity of the peritoneum, and to have probed about with the finger might have resulted in breaking down adhesions and producing general peritonitis, and thus, in a moment, destroying the satisfactory results slowly and patiently produced by the natural recuperative powers of the patient.

CASE IX — *Horse shoe fistula in ano* Sheikh Idu, aged 36, was admitted on the 23rd of January 1900, for the treatment of anal fistula.

He had been suffering for seven years, had been steadily growing worse, and was now in a wretched condition, as he had great pain each time the bowels acted, which lasted as a rule for hours.

On examination, five external openings were found, two on each side of the anus, and one above and to the outer side. On examination per rectum it was found that piles were not present, and one internal opening was discovered in the middle line posteriorly.

The patient was prepared for operation the following morning, the bowels having been cleared with castor oil and an enema. Chloroform was administered, and the internal opening was attended to first, a director was passed into this and pushed onwards till its extremity could be felt under the skin, an incision was made on to it, and it was made to pass out, the intervening bridge of tissues, including the sphincter, being then divided along its groove. The director was then passed into the nearest external opening and on through the recently made one, the superficial tissues between being divided (external to the sphincter). Each of the other external ones was similarly dealt with until all the five had been connected with the new external one. The result was a large semi-elliptical wound, but the sphincter was divided only in one place, in the hope that its function would not be seriously interfered with.

The result was most satisfactory, the patient improved at once, and after a residence of a little more than two months, was discharged thoroughly cured, with complete control over the sphincter, a very large scar indicating the extent of his troubles.

In such cases division of the sphincter at more than one point is liable to result in loss of control and incontinence of feces, a most deplorable condition, but when that muscle is divided at a single point such a result is unlikely to happen.

CASE X.—Supra pubic Lithotomy Moniruddi, aged 32, was admitted into the hospital on the 6th of October, complaining of retention of urine.

He had been suffering from pain and difficulty in passing water for about a year which, during the last three or four months, had grown much worse. The urine had not been passed in a stream for some weeks, but had dribbled away constantly and, for the last twenty-four hours there had been almost complete retention.

The assistant surgeon passed a catheter which struck a stone, but did not enter the bladder, he tried several times with instruments of various kinds and sizes, but could not insinuate one past the stone which was evidently projecting into the urethra from the bladder.

That night the urine dribbled away, and the following morning, when I saw the patient, his condition was much the same as on admission. He was put under chloroform, and I tried to pass a catheter, but without success, nor had I a better result with a sound.

As the bladder could not be entered, litholapaxy was out of the question, nor was lateral lithotomy feasible, so I determined to open the bladder above the pubes. I did not distend the rectum, but made the usual incision and, pushing up the lower fold of the peritoneum with a sponge, kept it out of the field of operation. The bladder was reached without difficulty. I pulled it up with a sharp hook and made an incision which admitted my finger, enlarging it subsequently guided by the latter. I immediately came upon a fairly large rounded stone, which was firmly fixed, the projecting end was globular and afforded a good hold, so I seized it with lithotomy forceps, and made gentle rotatory movements in order to draw the stone out. At first there was no result, but persistent efforts gradually succeeded in starting the stone which in two or three minutes was free.

On removing it, I found a most perfect dumb-bell, one globular end of which had occupied the bladder, while the other projected into the urethra, and the narrow neck had lain in the neck of the bladder.

The patient made an uninterrupted recovery, and was discharged on the 6th of November.

The stone is now in the museum of the Calcutta Medical College Hospital where it is unique, no other specimen of the kind being present in the large collection of calculi to be found there.

This case is interesting in connection with the recent articles on Stone, in which the high operation has been condemned except for large stones.

As an instrument could not be passed into the bladder, I think it will be admitted that, in this case, not only was supra pubic lithotomy permissible, but actually necessary, and it proved to be as simple as it was successful.

CASE XI.—Compound comminuted fracture of the skull with laceration of the brain, Escape of brain substance, Trephining. Recovery

Niamat Ali, aged 36, was brought to the hospital on the morning of the 1st of November, with a wound of the head.

He had been painting the side of a vessel in dry dock at the India General Navigation and Railway Company's Dockyard at Garden Reach, when he fell over and landed on the stone pivotment, on his head. He was sent to the hospital at once, and arrived while I was there, so received immediate attention.

He was quite unconscious, bleeding freely from two wounds on the right side of the forehead, from which brain matter was escaping in large quantity. He was put on the table, and the part was thoroughly washed and cleaned, and I discovered an extensive comminuted fracture of the right frontal bone, extending from the middle line, at the root of the nose, where it was greatly depressed, outwards along the supra orbital arch toward, the temporal bone.

I enlarged the two wounds, which were transverse and nearly parallel, so as to attain a good view of the parts, and applied the crown of a trephine an inch in diameter just above the middle of the orbital arch removing a semi-circle of bone, after which the depressed portions were easily lifted out. The brain was extensively lacerated at this point, and large portions of it escaped through a long rent in the membranes, and I washed away a considerable quantity of contused brain substance with a gentle stream of warm lotion. I then worked outwards, removing piece after piece of detached bone, the frontal bone presenting an appearance like the crushed shell of a hard-boiled egg. The entire outer half of the supra orbital arch was greatly depressed, but, being quite loose, was removed, in all, eighteen loose fragments were taken away, and, owing to the contused and lacerated condition of the brain and membranes, these could not be replaced, and there was, therefore, a large gap in the frontal region.

There was free hæmorrhage which was traced to a vein in the dura mater, which was ligatured, and, the parts having been gently irrigated with warm boracic lotion, the edges of the rent in the dura mater were brought together with fine catgut, and the margins of the skin incisions were brought into opposition with silkworm gut, a few strands of catgut being placed inside as a drain.

The parts were dusted with a mixture of boracic acid and iodoform, and a dressing of salicylic wool applied which was retained in position with a capeline bandage.

The patient bore the operation well, he was semi-conscious that evening, but did not like being disturbed, the following morning he was better, was conscious, but resented being disturbed, and would not answer questions, he took nourishment freely, however, and emptied his bladder voluntarily, his temperature was normal, and his pulse was good.

The subsequent course was uneventful, the patient complained of pain in the left forearm, which had sustained a Colles' fracture, but never had any com-

plaint as to his head, he had neither convulsion nor paralysis in fact, showed no symptoms of any kind

The dressings were removed on the fifth morning, the wound was healed, and there had been only a slight serous discharge, the catgut drain was removed, and the part was dressed as before

A few days later there was slight bagging of pus at one corner, this was let out, and there was no further trouble

From the 11th to the 15th day there was a slight rise of temperature, evidently due to malaria, which promptly yielded to quinine, and the patient was discharged on the 4th of December, perfectly well. He left the hospital with a depression, in the frontal region, three inches long, two inches wide and an inch deep, and we fitted a vulcanite plate over it to protect the brain, whose pulsations were distinctly visible

On the 7th of January I happened to be at the I G N Co's Dockyard, and found my late patient at work, and looking perfectly well

A CASE OF DIPHTHERIA TREATED WITH ANTI-DIPHTHERETIC SERUM

BY BIMAN BIHARI BASU, M.B.,

Assistant Surgeon, Banlupur

S D, a Hindu male child, *æt* 3 years, was seen by me on the seventh day of his illness on 27th October last

Previous history—The child suffered from acute tonsillitis about a year ago. Has had slight enlargement of the tonsils ever since that attack. Was attacked with cough and fever about a week ago, but the fever was at first only slight. The fever became high for the last three days, whilst the cough became more and more troublesome and hoarse

Condition when first seen—The child's throat was very much congested, both tonsils enlarged and covered with greyish (wash-leather) membrane. The lymphatic glands of the angle of the jaw were enlarged. There was a purulent discharge from the nostrils. The child could not breathe through the nose. His temperature was 102.6° F, and he was very restless

The case being diagnosed as one of diphtheria, 2,000 units of diphtheria anti-toxin was injected subcutaneously at about 2 P.M. on the 27th October. Next day the child's temperature was little better, and the throat symptoms also improved. About noon on the 28th, another injection of 2,000 units of anti-toxin was given. Next day the child was much better. He was quiet and slept well at night, and the membranes disappeared, except a small patch on one of the tonsils. But the temperature still continued above normal, till on the 4th day after the first injection of antitoxin, it came down to normal

Remarks—Although the antitoxin treatment was resorted to rather late in the disease, the results were remarkably good

EYE DISEASES IN KASHMIR

By A MITRA, LRCP, LRCS (Ed),

Chief Medical Officer, Kashmir

THE diseases of the eye and its appendages are very common in Kashmir. In infantile life measles and small-pox, then the dirty habits and bad hygienic conditions, syphilis, hereditary and acquired, a damp cold climate, snow in winter, and a hot scorching sun in summer, all these are responsible for the prevalence of eye-diseases. Treatment is neglected, and even simple ophthalmia under unfavourable circumstances and surroundings and neglect lead to destructive diseases resulting in blindness

I shall mention the principal diseases we meet with in our hospitals and dispensaries according to their relative frequency

1 **Trachoma**, with or without entropion, met with chiefly in adults. Its existence in several members of the same family points to its being an infectious disease probably due to a specific microbe. I have seldom seen an acute case of trachoma. It is, as a rule, chronic from the beginning with scarcely a well-defined acute stage. The cases we met with are usually associated with pannus with a good deal of cicatricial contraction or shrivelling of the conjunctiva and consequent alteration in the direction of the eyelashes

Treatment—Hot boracic douche and in the chronic state touching with Lapis Divinus have proved in my hands most useful. I have found no good from nitrate of silver. When the granulation are abundant I excise portion of conjunctiva

Operation for trichiasis—On an average 500 operations for this condition are done in the hospitals and dispensaries in Kashmir. The operation done is what is known as Ait's modified, with one incision below the free border of the lid through the cartilage and then the incision of a semi-lunar flap of skin from the eyelid. The operation, as a rule, gives good result, though failure to produce the desired improvement frequently happens

2 **Ulceration of the Cornea**—Among other causes inherited syphilis plays a prominent part. In our out-door practice we see children with acute inflammation of the eye, lachrymation photophobia and a rapidly extending ulcer over the cornea. I treat these cases with mercury internally and washing the eye with a neutral solution of perchloride of mercury (1 in 8,000)

3 **Tinea Tarsi** is a common complaint among both children and adults, leading to complete destruction of the eyelashes. Treatment,—yellow oxide of mercury ointment (grs 8 to 31).

(To be continued)

THE
Indian Medical Gazette.

JULY, 1901

THE DYSENTERY OF ENGLISH ASYLUMS.
A REVELATION

WE have on at least two former occasions* discussed the nature and existence of dysentery in the Lunatic Asylums of England. In our article in February 1899, reviewing Dr Gemmel's valuable book on "Ulcerative Colitis," we pointed out that no one with any knowledge of dysentery would hesitate in calling the disease he described dysentery, and we strongly commended Dr Gemmel for his honesty and outspokenness, and showed that to hide the fact of the existence and persistence of dysentery in these institutions was in every way wrong, dangerous and misleading.

It is therefore with pleasure that we welcome the admirable report of Dr F W Mott, FRS, and Dr H E Durham on "*Colitis or Asylum Dysentery*," which has recently been presented to the Asylums Committee of the London County Council.

We find that these two distinguished pathologists absolutely agree with the view we put forward of the essential identity of the asylum disease, and the dysentery which we know only too well in India.

Drs Mott and Durham show by a large number of quotations from a variety of writers old and recent, that dysentery has never really been absent from England, though it has been generally assumed that it is nowadays a mere tropical disease. It is well known that typical outbreaks of dysentery have taken place, in recent times, in the prisons and asylums of England, but of late years there appears to have grown up a practice of referring to these fatal outbreaks as "colitis," a term of a non-committal nature, which connotes no lack of sanitation, such as is necessarily implied in the term dysentery. This practice seemed to have some sort of justification from the fact that certain writers of repute had de-

scribed a "simple" colitis, a "septic membranous colitis," and a "chronic ulcerative colitis" which they endeavoured to differentiate from dysentery, but we think that anyone who will read the article by Dr W Hale White, in which these views are urged (*Allbutt's System*, Vol III, p 937), will agree with Drs Mott and Durham when they write that "they are unable to gather any tangible difference between the simple and the dysenteric disease."

Unfortunately space does not allow us to follow this report in its entirety, we must be content to recommend its perusal to all who are interested in dysentery in the jails of India. In many respects its prevalence and persistence in English Asylums is very similar to what we find in our Indian jails, and if we do not understand as much as we desire of the causation of the disease in the jails of India, we may possibly take some consolation from the fact that our *confidés* at home know even less about it. The recommendations and the revelations of this report must be attended with advantage at home, and it is not impossible that in the many and serious defects of hygiene pointed out as common in English Asylums we may find points worth attending to in our endeavours to control jail dysentery.

The first feeling, however, of the reader in India on opening this report will be one of astonishment that such a state of affairs as revealed in the report could have been permitted to prevail so long. He will also be struck with the slack and casual way in which the returns of the sick are allowed to be kept in these, the leading Metropolitan Asylums of England. When Drs Mott and Durham began their inquiries they found absolutely no data in some asylums to go upon, diseases were returned anyhow, and no proper register, either of clinical symptoms or of *post-mortem* appearances, was kept. We have no hesitation in saying that such a state of affairs could not have been permitted for even a month in any Indian province.

But such instances of executive and administrative slackness pale into nothingness before the recital of the manifold insanitary surroundings of the chief Lunatic Asylums of England. Our readers must remember that this book of revelations refers to not obscure country asylums, but to the three chief asylums of London, *viz*, Claybury, Hanwell and Colney Hatch.

* *Indian Medical Gazette*, February 1899, and January 1900.

Let us just mention a few of the sanitary delinquencies which this report has brought to light in these three celebrated asylums

1 At Claybury, "drains defective wherever tested"

2 The garden vegetables irrigated with raw untreated sewage

3 In the wards and corridors at Claybury our authors "often noted" expectoration, food slops and dried phthisical sputum lying on the floors

4 Fecally contaminated mattresses were scrubbed in a "foul laundry," with "minimal quantities of water," and "almost or quite without soap" These mattresses were then put into a dry chamber, "with just enough warmth to produce a growth of bacteria" No wonder we read that the "number of organisms in Colney Hatch mattresses are far in excess," and that cultures of them could kill a guinea pig in 16 hours Moreover, it is clear that these mattresses after such perfunctory "disinfection" were redistributed indiscriminately among the wards and among the patients whether sick or healthy

5 The personal cleanliness of the patients was "imperfectly regulated"

6 The excrement from a known case of dysentery was seen to be thrown down the water sink in one of the wards

7 One towel was provided for every five or six patients

8 Overcrowding was very common, in one case 65 patients slept in beds "almost in contact with one another"

9 Patients also had to sleep on the floor between the beds

10 The attempts to isolate the dysentery sick from the healthy lunatics is said to be "imperfect."

11 Extraordinary as it may seem at the end of the nineteenth century (our authors write) "no provisions existed in Claybury, Colney Hatch nor Hanwell for the isolation of infective disorders" At Claybury "infected and non infected were more or less often mixed up"

12 Indiscriminate transfers of patients from ward to ward irrespective of whether dysentery existed or not

13 No precaution taken (as regards previous or present dysentery) in transfers from one asylum to another

14 Imperfect destruction or sterilisation of articles known to have been contaminated

15 In one asylum Mackintosh sheets, fouled by dysentery stools, were seen being washed in the bath!!

We have quoted enough to show the lamentable want of supervision which these expensive and important institutions have been allowed to suffer from, we can only understand it on the view that the hands of the medical officers in charge were tightly tied by an unsympathetic Managing Committee, and even then it is not easy to believe that such a want of elementary

sanitation could be permitted to persist in institutions managed by the County Council of the Metropolis

In conclusion we can strongly commend this valuable report to the consideration of our readers, it is soberly and scientifically written and must surely carry weight with the Council for whose information it was compiled We hope to hear that immediate steps have been taken to abate the scandal, this is probable, for unless they were prepared to put an end to this state of things, we cannot conceive the County Council allowing the publication of such a damning document

BIOLOGICAL SEWAGE PURIFICATION FOR INDIA

ONE of the most valuable articles in the *Scientific Memoirs of Medical Officers* which we review in another column is that on "*Practical Methods of Sanitation in India*" by Major Ernest Roberts, DPH, I.M.S. The object of the paper is to review the methods of sanitation now in vogue in Indian cantonments and to examine their adequacy and then to review the recent advances in the biological methods of sewage purification

The paper begins by showing that the great prevalence in India of enteric fever, cholera, dysentery and diarrhoea, not to speak of Malta fever, connotes a failure to secure a certain standard of hygienic righteousness, this failure is definitely attributed to the presence of pollution in the immediate environment, what Sir John Simon has called the "habitual poisoning of the soil"

The writer then proceeds to criticise, in terms which all must admit to be true, the present methods of sewage disposal It is shown that in the majority of cases the trenching system leaves much to be desired In cantonments it is very generally and in municipalities it is nearly always a failure, in fact it is only in strictly limited communities like jails, where supervision is strict and labour abundant, that this system can at all be called a success

We cannot here follow Major Roberts in the evidence he produces to show that the trenching system is practically a failure and how disease can and must arise from this neglect The whole tendency of the evidence, marshalled by Major Roberts, is to "incriminate the soil as

the chief source of enteric fever and other bowel complaints, directly and indirectly, through the water and food supplies."

Major Roberts then goes on to show the principles on which the modern biological methods of sewage purification are founded, and discusses the two common objections to the adoption of these methods in India.

The first objection usually raised is want of experience of the system and the necessity for an abundant supply of water for dilution.

To this Major Roberts replies that experiments in Poona, Simla, Bombay and Calcutta have already shown the possibility and applicability of these methods in India. As regards the water-supply, the Indian experiments have shown that even for the disposal of the bulky excrement of the Natives 5 (or even 3 as in Calcutta, Silk) gallons per head for dilution is ample, and for the lesser quantity per head of European excrement 3 gallons would amply suffice, and this 3 gallons is certainly supplied to the soldier in cantonments for ablution and culinary purposes.

As regards the great question, "Do pathogenic organisms survive biological methods?"

Major Roberts fairly tackles it, first pointing out that the existence of these pathogenic germs in liquid and solid excreta forms the most damning indictment against our present trenching system. He points out the pathogenic organisms of water-borne diseases are aerobes, and under the conditions which obtain in a septic-tank or bed swarming with anaerobes the aerobes are the most fastidious and the least robust in the struggle for life. In fact "the sojourn of fastidious parasites in an anaerobic tank exposes them to such unfavorable conditions, mechanical (from sedimentation and a course of upward and downward filtration), chemical, and biological, that the chances of ultimate survival in the final effluent are exceedingly poor and doubtful."

Major Roberts concludes this section of his article as follows —

"The future of the biological methods in India would appear to be exceptionally promising, they have already given results that have definitely settled the main question of their practical application to Indian conditions, as a rule, there is plenty of land to spare, the people appreciate the value of irrigation, here if anywhere, it is incumbent on us to replenish an exhausted soil no natural or artificial dressing

has the assimilable manurial value of a biological effluent if properly matured (see Poona experiments), the methods as employed at Simla, and generally elsewhere, show how easily the ordinary means of collection and removal can be utilised and adopted, though this is a counsel far short of perfection, a minimum water-supply per head presents no difficulty, the apparently insuperable difficulty of obtaining adequate supervision, absolutely essential for carrying out trenching, is largely minimised, and with a proper integral system of removal is almost actively obviated, while the risks to health are reduced to a minimum. In larger communities installations can be established at suitable points...As regards the final disposal of the effluent, we have doubtless something yet to learn, if it be desired to discharge it into a stream. Our own opinion is that no means of disposal can compare with land irrigation, both for safety and for the return we desire in the shape of vegetables and other crops, which will go far to recoup the expenses of the first cost of the necessary apparatus."

Major Roberts then goes on to explain and gives plans of the installation of the new methods, based on his own experiences when Health Officer of Simla. He shows how the method can be adapted to the conditions of cantonment life. In conclusion we strongly commend this valuable essay to the consideration of all medical officers in India, and express the hope that very soon this method may be largely tried in cantonments, jails and municipalities in India.

LONDON LETTER

THE IMPERIAL SANITARY COMMISSIONER'S REPORT FOR 1899.

THE early appearance of this valuable report is a very satisfactory circumstance. The quality of the contents has not suffered from the increased speed of preparation. I have read every report of this series since the commencement of their publication, and have no hesitation in pronouncing this to be quite the best of them. It betokens industry, intelligence and care on every page and is highly creditable to the compiler. It is a most instructive and useful volume from the point of view of the manner in which Indian facts and experiences are brought into comparison with work done and published

elsewhere, but the most remarkable feature which the report displays is the evidence which it furnishes of increased activity throughout the service in the investigation of Indian diseases on scientific lines. That this feature may become more prominent as years progress ought to constitute the subject of aspiration and endeavour on the part of all well-wishers of the Indian Medical Service. After all, character is a more valuable asset for a service as well as for an individual than any other, and although the Indian Medical Service has reason to complain of inadequate pay, curtailed leave and other grievances, as long as its members continue to maintain and strive to enhance its high reputation, so long will good men be proud to have belonged to it, to enter it and to avail themselves of the opportunities which it offers for good work. Under such conditions grievances may be allowed to take care of themselves, they will be remedied.

THE MALARIA NUMBER OF THE "PRACTITIONER"

Special numbers of medical periodicals devoted to special subjects have now become the fashion. The *Practitioner* has taken a worthy lead in this departure, and none of its special numbers will be better appreciated by tropical practitioners than the latest, the March number, which is devoted to supplying the most recent information on the subject of malaria. The articles are contributed by Manson, Sambon, Rees and other men who have made this subject a speciality. They are concise, clear, well written and illustrated, and, as might be expected, quite up to date. It is extraordinary what a revolution has taken place within a very few years in regard to paludism. It would be difficult to find a parallel to the sudden upset of ideas possessing the authority and sanctity of great names and high antiquity by an ingenious hypothesis followed by a few shrewd researches. Nevertheless the old facts founded on the observation and experience of men will in their time remain and lend themselves to a new interpretation derived from fresh discovery. In this respect the situation is by no means singular. All advances in science and art are really evolutions. For example the brilliant results obtained in the removal of scroful elephantiasis recorded in the excellent paper contributed by Major R. Havelock Charles, I.M.S., to your March number are the outcome and climax of a long succession

of preceding efforts and expedients dating from early in the last century to which the author might with advantage and grace have made some reference. From this paper as it stands one would infer that the whole conception, method and executing of the operation were original, whereas the reality is that the amount of originality is very limited, consisting in slight modifications of procedures previously adopted and published by others, and as regards some of these, their title to being improvements is questionable, particularly from the point of view of recurrence. At the same time Major Charles is entitled to the highest praise for the manner in which he prepared his patients, for the judgment and care with which he performed the operation, and the scrupulous attention which he paid to dressing, and nursing, all resulting in the attainment of a "record" of which he has every reason to be proud.

YAWS AND SYPHILIS

A very important contribution has been made to the solution of the vexed question of the identity of these two infective granulomata. The Polyclinic has several standing committees for inquiry and discussion—one of them on yaws, regarding the pathology of which Mr. Johnathan Hutchinson, who is a leading and moving spirit in this excellent institution, holds very pronounced views. At a meeting of the yaws Committee, which was held on the 28th of March, a paper was read "On Yaws as Observed in Fiji," by Mr. Morgan Finucane who, as Assistant Medical Officer, Fiji, Inspector of Natives and Medical Superintendent of the Colonial Hospital, possessed abundant opportunities of observing and investigating the disease among natives and foreigners. He holds that the "Coko" or Fijian Yaws is a somewhat distinct disease from West Indian or West African yaws, and that the former is simply syphilis modified by local conditions, climatic, racial and social. He describes a prodromal or invasion stage, primary, secondary, and tertiary manifestations similar to those of syphilis, and declares that potassium iodide has the same curative influence on coko as on syphilis. The disease, he states, presents "clinical characters so overwhelmingly in favour of a syphilitic origin as to be beyond dispute or argument and for practical purposes as to treatment, identical." The paper is published *in extenso* in the

Polyclinic Mr Hutchinson in an editorial note claims that the facts represented by Mr Finucane finally settle the question as to the identity of yaws with syphilis. Drs Manson, Radcliffe-Croker, Colcott-Fox, and Mr Cantle who took part in the discussion following the reading of the paper thought differently, but there can be no doubt that Mr Hutchinson's views have received very strong support from this communication, and that the question in dispute has reached a more acute stage.

SIR JOSEPH FAYLER

Among the medical appointments made by His Majesty King Edward VII the name of Sir Joseph Fayler is conspicuous as first on the list of Physicians Extraordinary.

This distinction will be a source of gratification to himself, to his friends and to the Indian Medical Service. It is well deserved, for, apart from his eminence and public services, Sir Joseph Fayler attended the King and his late brother, the Duke of Edinburgh, during their travels in India and piloted them successfully through the perils to health inseparable from a tour in a tropical country.

THE WAR HONOURS

THE long-looked-for Gazette, containing the honours and rewards bestowed for distinguished service in the South African Campaign up to the 19th of November 1900—the day on which Lord Roberts made over charge of the operations to Lord Kitchener, has made its appearance. The Medical Service have obtained a goodly share of distinctions. Four V.C.'s have been conferred on members of the Royal Army Medical Corps, namely, Major Babbie and Lieutenants Inkson, Nickelson and Douglas. Many others have been mentioned in despatches for devotion to duty and gallantry in rendering aid to the wounded under fire. This list of decorations includes 2 K.C.M.G.'s, 5 C.B.'s, 11 C.M.G.'s and 10 D.S.O.'s for the regulars and 1 C.B., 1 C.M.G. and 12 D.S.O.'s for the Colonials. One Consulting Surgeon has received a K.C.B. and G.C.B., and 7 C.M.G.'s have been distributed to other Civilian Physicians and Surgeons. Several steps of promotion have also been given to officers of the R.A.M.C. That these awards have given universal satisfaction in number and kind can hardly be asserted. On such occasions heartburnings and disappointments are seen to arise, but it cannot be denied that the roll is a long one, and it is safe to say

that every name which it contains is a worthy one, and every distinction conferred has been well earned. The medical profession has acquitted itself admirably in this war, and it is to be hoped that any changes in organization which the near future may produce will strengthen the position, maintain the prestige and enhance the power for good of the Medical Department of the army. These distinctions are accepted by the profession as an encouragement to well doing, but more substantial attractions are requisite if good men are to be obtained in sufficient numbers to perform good work.

THE DIRECTOR-GENERAL

While so many of the rank and file have been rewarded for services connected with the South African War, it is a subject of astonishment and regret that the head of the Medical Department has been overlooked. The omission is even regarded as a studied slight upon the whole service, and interpreted as a forecast of the dealings which the new War Minister is about to initiate, which it is feared will possess more of the nature of humiliation than of reformation. This view is probably an extreme one. To belittle a service and violate the *amour propre* of its members is certainly not the way to increase its attractiveness or promote its efficiency, and no statesman in his senses would take this line unless he meant to end rather than to mend it. At the same time it is an indisputable fact that Director-General Jameson has acquitted himself admirably in the present serious emergency, and made ample provision of men and material under circumstances of peculiar difficulty. Starting with a very short-handed establishment and a serious difficulty in obtaining recruits to replenish it, called upon to provide for operation on a vastly greater scale than was at first contemplated, he has succeeded by devising and carrying out arrangements, departmental and otherwise, in supplying a large staff of Medical Officers and men equal to the needs of the occasion and sending to the Cape an ample store of medicines, appliances and comfort. Shortcomings depending on unforeseen emergencies, deficient transport and other drawbacks, inseparable from the conditions of active warfare, arose through no fault of prevision or provision on his part, and the general verdict is that he has acted a wise,

strong and successful part in this South African drama. Why then have the services not been suitably recognised? It is said that the honour which, it is acknowledged, is his due is simply deferred until the end of the war. But why did other heads of departments—the Director, General of Ordnance and the Quartermaster-General of the Forces—obtain special recognition at this time? In ordinary course the Director-General, like his predecessors, will be created a KCB, and if this is the only honour that is in store for him, it will lose significance and value, in relation to services connected with the war, on that account.

THE R. A. M. C.

A report has recently been issued by the British Medical Association on the condition and prospect of the Royal Army Medical Corps, which is very opportune and ought to carry great weight. It was drawn up by a sub-committee of the Parliamentary Bills Committee, adopted by the Council of the Association and published in a Supplement to the 4th May number of the *British Medical Journal*. The compilers of the report sought evidence regarding the estimation in which the service is held from the Medical College and schools throughout the kingdom, and found that there is a general consensus of opinion that the service is undermanned, that this undermanning is caused by insufficient pay of the junior ranks, and gives rise to most of the hardships of which complaint is made—mainly, overwork, harassing changes, excessive foreign service, insufficient ordinary leave and no study leave. The startling statement is made that, although the army has undergone increase, the strength of the Medical Service is about 200 short of what it was forty years ago. Among other suggestions offered for rendering the service more popular, it is proposed to abolish the entrance competitive examination, which has of late years been nominal, and recruit the ranks of the corps by placing nominations at the disposal of colleges and schools. This system of nomination has been largely resorted to since the commencement of the war, and has obtained as good a stamp of men as competition, if not better. The training and examination would benefit one class as much as the other and further serve to eliminate the unfit or undesirable. Indeed there are many qualifications of an army surgeon which a

competitive examination is inadequate to test, but which would be accorded due weight in a scheme of selection by the colleges and schools, and subsequent observation, instruction and testing in the Army Medical School.

The report contains a recommendation that the R. A. M. C. and I. M. S. should be amalgamated in so far as military duties in India are concerned. This would probably necessitate the creation of an Indian Civil Medical Service, and put an end to the Indian Medical Service as at present constituted. Proposals of this kind have been frequently made and as often rejected. The question is hedged round with numerous difficulties, traditional, sentimental, administrative and economical, and requires a very searching examination and careful and cautious consideration, which a body, such as this sub-committee could hardly form its lack of information and experience, more especially recent and present conditions, be expected to exercise. On one point the report has raised loudly and firmly the judgment of the medical profession, namely, that in the words of the *British Medical Journal*, "should any ill-advised meddling with the rank and titles of Army Medical Officers now be attempted under the name of reform, the result will be an abject failure that will cover the responsible Minister with shame as with a garment and lead to a state of things that will entail heavy cost on the over-burdened taxpayer, and too probably also much preventable suffering on our troops."

K. McL.

9th May 1901

Current Topics.

THE ROYAL SOCIETY AND THE I. M. S.

At a time when one of the medical services of the army is being submitted to such fierce and often unfair criticism, it is pleasant to be able to chronicle the honours done to the Indian Medical Service by the Royal Society. That out of the three medical men elected to be F. R. S. this year two of them should belong to the I. M. S. is, we consider, a proof of the esteem in which the service is held by the leading scientific men in England. We therefore heartily congratulate Major Ronald Ross, F. R. C. S., and Major A. W. Alcock, LL.D., on the high honour that has been conferred upon them. As to Major Ross' qualifications we need say nothing. His name has become a household word in connection with

modern views on malaria. The work done by Major Alcock, when Naturalist to the Indian Marine Survey and as Superintendent of the Indian Museum, Calcutta, is not probably so well known to those of us who confine our reading to purely medical science, but that it is well known in the scientific world the present F R S and the honorary LL D of the University of Aberdeen recently conferred on him are a sufficient proof.

It may be worth while to recall the names of other officers of the I M S upon whom this honour has been conferred. The first we know of was John Fleming, who received his F R S in the eighteenth century, then come Horace Hayman Wilson, the famous Oxford-Sanscrit scholar, who entered the service on 17th September 1808, Sir James Ranald Martin (entered the service on 5th September 1817), Sir Joseph Fayrer, *Bart*, Physician to the King, J E T Hitchison, and D D Cunningham.

THE CAUSES OF HYDROCELE

THE letters that have appeared on this subject of late, few as they have been, have each afforded some interesting information regarding the causation of hydrocele. That filariasis is the cause of a certain proportion of cases of this disease is a well established fact, but there is every reason to believe that the proportion of such cases is comparatively small. In the editorial on this subject, which appeared in November last, it was shown that as many as 10,936 cases of hydrocele were treated in the North-West Provinces and Oudh in the year 1899. And again, in the April number of the journal, Dr Carroll, writing from Basti, states that, in that district, the disease is very common. Yet in those districts filarial disease is unknown. These facts alone serve to show that the part played by filariæ as a cause of hydrocele in India is comparatively speaking a small one. In districts where filariasis is prevalent many cases of hydrocele of undoubted filarial origin are seen, but at the same time large numbers of cases are met with in which there is no suspicion of filarial disease. In dealing with patients of ordinary intelligence it is usually quite easy to separate the filarial from the non-filarial cases. The effusion of fluid which occurs in filarial cases is due to obstruction in the lymphatics, and once such obstruction has set in, other symptoms, such as periodical attacks of fever and pain, arise. When a patient gives a history of gradual and painless enlargement of the sac, unaccompanied by any signs or symptoms of disorder of the lymphatic system, the presumption is that the hydrocele has no connection with filariasis, even should the patient harbour embryo parasites in his blood.

These facts serve to show that filariasis plays but a small part in the causation of hydrocele, and that in the vast majority of cases we have

to look for some other explanation of the origin of the disease.

Most surgical authors are in the habit of ascribing the disease to the relaxed state of the scrotum which obtains in tropical climates, and, so far, no argument has been brought forward to refute this explanation of its etiology. On the contrary, so far as our present knowledge goes, there is every reason to believe that this relaxed condition of the scrotum is the chief causative agent of hydrocele. When the scrotum is in the normal state it acts as the main agent in suspending the testicle. On the other hand, when it becomes relaxed, the whole burden of supporting the testicle falls upon the structures of the cord. The immediate result of this dragging on the cord is to produce partial obstruction of the venous circulation through the testicle, and it is presumably this condition which results in the gradual accumulation of fluid in the sac. As the hydrocele increases in size a vicious circle is established in the part, the heavier the testicle becomes the greater the obstruction to the venous circulation. The correctness of this theory is borne out by the fact that, if means are taken to support the testicle properly, a hydrocele may often be cured in its initial stage. On the other hand, the *dhoti* improperly used may, as Captain Jennings has pointed out (*Indian Medical Gazette*, January 1901), produce a hydrocele by causing obstruction to the venous circulation of the testicle. Much no doubt depends upon the way that the *dhoti* is worn. If, as is frequently the case, it is used merely for compressing the testicles against the perineum, its use tends to favour congestion and the production of hydrocele. If, on the other hand, the cloth is so applied as to draw the testicle upwards, towards the inguinal canal, as Dr Carroll says is done by the Nicobarese (*Indian Medical Gazette*, April 1901), the strain is entirely taken off the cord and congestion prevented. Hydrocele is relatively much less common amongst the European population of India than amongst Natives. Here again dress, in all probability, plays a large part in the prevention of hydrocele amongst the former.

THE THOMPSON YATES REPORT, 1901.

OF the ten valuable articles published in the third volume of the Thompson-Yates Laboratories report we can only pay attention to those dealing with malaria. These consist in (1) an article on "Prevention of Malaria in Tropical Africa," by Mr S R Christophers, now at work in India on malaria problems, (2) on "Enlarged Spleens and Malaria," by Dr C W Daniels, (3) on the "Life History of Parasites of Malaria," by Major Ronald Ross and Mr R Fielding-Ould, and (4) the "Report of the Liverpool Malaria Expedition to Nigeria," by Dr H E. Annett.

In the first-mentioned article Mr. Christophers discusses the now well known methods of the prevention of malaria, pointing out the difficulties of each, and he concludes, as he did in his report to the Royal Society, that the really only practical method is the segregation of Europeans. No attempt is made to rid the natives of Africa of the disease, but if their immunity be as great as is reported, it is obvious that little remains to be done for them. Therefore for the European in Africa, and we may add for the resident in India, the most practical method of prevention is to separate himself and his house from the neighbourhood of any native huts. This means nothing more than that the huts of native servants and others be removed as far as possible from the master's house, so far that an infected mosquito should not be able to find its way from the hut to the house. Much might be done in this way even in India, once it is recognised that malaria is an infectious disease, and that it is very often present in every native hut.

The next article is on "Enlarged Spleen and Malaria," it is by Dr. C. W. Daniels, now Superintendent of the London School of Tropical Medicine, whom we have learned to look upon as a reliable observer. It is largely based on his former experiences in British Guiana. Dr. Daniels concludes that as a test for the prevalence of malaria the "spleen test" may be worse than useless unless race and age are taken into account. In Africa, if examination be made of persons 5 to 15 years of age the least healthy districts would appear to be the least malarial, judged by the proportion of enlarged spleens. This may be true of Africa where the conditions of malarial infection and immunity from malarial symptoms are so different from those in India. Moreover while we admit that other factors influence enlargement of the spleen, yet we know of no cause for enlargement of the spleen which is worth considering alongside of malaria, and hence we cannot help believing that enlarged spleen is to some extent a measure of the past and present prevalence of malaria in a district.

The next article by Ronald Ross and Fielding-Ould on the Parasites of Malaria is too long to be extracted here. It is admirably illustrated, and is a most accurate and clearly written review of the parasitology of the malarial fevers.

The most important article in the volume is, however, the Report on the Malaria Expedition to Nigeria. It consists of 66 pages, and is copiously and beautifully illustrated. It is obviously impossible to give any idea of this report in small space, we commend it to our readers, as it should be read by everyone interested in malaria. The recommendations are summed up in a few words (1) segregation of Europeans at a distance of about half a mile from Natives,

and (2) surface drainage of areas around European quarters. It may be worth pointing out that the word "segregation" may nowadays conjure up ideas quite foreign to its meaning as applied to Europeans in Africa. It means no more than the selection of houses removed from native huts and villages, and the forbidding of vast congregations of native men, women and children in the neighbourhood of houses occupied by Europeans. In fact the big compound of the Indian house in the mofussil is what they want, only that in India we spoil our "isolation" by allowing innumerable servants with their friends and relatives to live within the boundaries of our "compound." Exclude these and we have "segregation" pretty much as is meant in West Africa.

ON RUNNING AMOK

We are all familiar with the expression "running amok," and cases with such a heading are not infrequently reported in the Indian newspapers. Our attention has recently been drawn to the subject by reading a very interesting article on the subject by Dr. Gimlette, a State Surgeon in Pahang, which is published in the *Medical Archives of the Federated Malay States*, 1901. We are accustomed in India to associate cases of "running amok" with the acute stage of delirious intoxication following the use of Cannabis Indica (*gunja*), but it is at least remarkable that neither in this paper by Dr. Gimlette nor in the discussion which followed it is there any mention of intoxication from drugs.

The word *amuk* or *amol* is defined in Marsden's Dictionary of the Malay language as "*engaging furiously in battle, attacking with desperate resolution, rushing in a state of frenzy to the commission of indiscriminate murder*." It is applied to any animal in a state of vicious rage. Indeed the Malay word for the mosquito, *namol*, is derived from it.

Dr. Gimlette regards it as a special pathological condition—a psychical condition, "the individual appears to be rendered sub-conscious, as in somnambulism, by the unmastered action of his own automatic centres." In *amol*, writes Dr. Gimlette, "there is a constant grouping of symptoms, (1) there is sudden paroxysmal homicide, generally in the male, with evident loss of self-control, (2) it is preceded by a period of mental depression, (3) there is a fixed idea to persist in reckless killing, due to an irresistible impulse of a purposive character, (4) there is a subsequent loss of memory." Dr. Gimlette goes on to say—"I do not go so far as to say that because a Malay has run amok that he should be exonerated from all criminality, but if an individual has committed murder without any possible motive, without profit to himself or any other person, without premeditation or passion, openly and consequent-

ly in a manner quite different from that in which crimes are generally committed, it seems almost a certainty, at least in the case of a civilised person, that it is due to the mental disturbance of some form of insanity."

In some respects Dr. Gunlette would liken it to the form of epilepsy known as "procurative," in which the patient starts to run. He recommends that every case of amok should be kept under medical observation for a definite period (of about four months) before trial, so that the mental aspect of each case be decided on its merits.

The discussion on the subject brought out a variety of opinions. The President said that amok represented a condition common to several states of mental disorder, and in it there was nothing essential or peculiar to the Malay.

The conclusion seems to be that questions of amok are to be decided in exactly the same way as in other questions of criminal responsibility. In the discussion of the subject in Chevers' Jurisprudence (that wonderful old book) we find a quotation from a report by a Dr. Oxley of the Straits Settlements in 1843. Dr. Oxley divided amok into two classes: (1) cases where the motive is revenge for a supposed or real wrong, where the assailant becomes perfectly reckless, and (2) what he describes as *orang beramok*, which requires the intervention of the medical jurist to prevent irresponsible persons suffering from the penalty of the law. It is not always the case that the persons first injured are those with which the criminal is at enmity (V Lyons, p. 263).

The question then resolves itself into the larger one of criminal responsibility—about which lawyers and doctors may be said to have agreed to differ. At any rate every case of amok should be treated as one for prolonged medical observation as to the mental state of the accused.

SHOWER BATHS OR TUBS FOR SOLDIERS BATHING

In a chapter in an admirable volume on "*Military Hygiene*" by Captain Munson, of the Medical Department of the United States Army—(which we hope shortly to review), we came across an excellent account of the various measures in force in the armies of Europe and America for the bathing of soldiers. The French and German armies have officially adopted the "shower bath" system as preferable to the tub. Captain Munson is entirely in favour of the "shower" or "rain bath" system, which, he says, "has every advantage when compared with the tub bath and immersion system." The first cost is less, the upkeep and repair is less. It is always ready, and a much larger number of soldiers can bathe in a given time. Five minutes' exposure is sufficient, the Germans and French only allow three minutes. Much less water

is required, 10 per cent of the amount of water required for the immersion system being only needed. There is no danger of communicating skin diseases, and there are no tubs to empty, refill and cleanse. In the British army, according to Surgeon-General Evatt, only one tub is provided per 100 men, which is absurdly insufficient. There are many "rain bath" systems in use. The "Clow Shower Bath," which is largely adopted in America is simple and allows of a mixture of hot and cold water, and is inexpensive.* The "Schaffstaedt system" is extensively employed in the German army and navy, but it requires the use of steam. All these methods are described in full detail in Captain Munson's book, which is a volume without a rival in the English language, and one which can be confidently recommended to all military surgeons. The publishers are Messrs. Wm Wood & Co., of New York.

Up to the end of March over 14 lacs of rupees have been spent on the alterations and additions to the Presidency General Hospital, Calcutta. The revised estimates however work out to 33 lacs, instead of 22 as was anticipated. Hence certain important works have to be postponed. So far the new block for males is completed, and the main kitchen and land for the whole scheme has been acquired. It is proposed at present to remodel and improve the present pay wards as a temporary measure. The 14 lacs already spent have been entirely provided by Government, half by the Government of India and half by Bengal. It is therefore a purely Government institution.

We have received the reprint of Dr. Wm C. Brossack's various papers on plague. The most interesting papers, in our opinion, are those on the mixed infection of influenza and plague, and on rashes observed in plague.

THE "*Archives de Médecine Navale*" for April 1901 contains a most interesting lecture on the trypanosomes and their pathological rôle by M. Mensil of the Pasteur Institute and M. P. Gazian, Médecin Principal de la Marine.

It discusses the varieties of this parasite as found in the rat (T. Lewis), in Suria (Evans), in Nagana or Tsè Tsè fly disease (D. Bruce), and in the disease known as *dourine* or *mal du cort*, a form of animal venereal disease in which Rouget in 1896 described a trypanosome in the blood.

THE rules for the management of the Albert Victor Lepet Asylum at Gobia, Calcutta, are published in the *Calcutta Gazette* of 5th June.

* The fact recorded by Edel that the average number of microbes given off by a person during a bath (bathing once a day) is no less than 3,860,000,000 is startling and inclines one to prefer the shower bath.

THE Ethnographic Survey of India is one which will be followed by medical men with much interest. The difficulty will be to get a capable man for Rs 200, a month in each province to do the work, 'in addition to his other duties'. Correspondence with local district officers will have results which will entirely depend upon the amount of interest taken in the subject by those busy officials. If we had a few more Risleys, Crookes or Waddells in the country the survey would not take long, as it is a lac and a half of rupees is not a big price to pay for a Ethnographic Survey of the British Empire in India.

WE are glad to note the remarkable improvement in the health of the Assam Jails in 1900, a rate of 22.8 per mille is extremely satisfactory. We propose to examine the causes of this good result when the report comes to hand, we wish we could share the optimism of the Chief Commissioner as to its continuance.

THE Government Resolution on the N-W P Jails is also published. We defer our remarks till the report reaches us. The death-rate also is very satisfactory—only 22 per mille as in the previous year. We note that cerebro-spinal fever was prevalent in Jhansi, Fatehpur and Allahabad Jails.

DURING the month of May 67 cases of relapsing fever were admitted into the Infectious Hospitals in Bombay City.

DR T F PEARSE, F.R.C.S., who has taken up the work of the St. John Ambulance Association in Calcutta, has published an useful abstract of the regulations for the formation of classes, which must be most useful to those who have to undertake this work.

"FANITIS" is the term popularly applied to a severe form of catarrh caught by sleeping under the otherwise invaluable electric fan.

IN this issue we publish the articles on ophthalmic subjects which were unavoidably held over from our special June number.

WE have to thank a large number of correspondents who wrote to congratulate us on the excellence of our special Ophthalmic number.

WE are very glad to see that owing to the representations of the Sanitary Commissioner with the Government of India, the Government have placed the services of Captain S P James,

IMS, at the disposal of the Malaria Committee of the Royal Society. The good work done in tropical pathology by Captain James, eminently fits him for such work. The intention of Drs Stephens and Christophers is to seek for and investigate cases of black water fever in India. We are also glad to see that advantage will be taken of the visit of these gentlemen to inaugurate a campaign against malaria in cantonments. *Quod bonum bene felix faustumque sit*.

Reviews.

Scientific Memoirs by Medical Officers of the Army of India.—Edited by Surgeon General R HARVEY, M.D., C.B., LL.D., Director General, IMS, Simla, 1901. Government Central Press. Price Rs 5 12.

THE twelfth part of these "Scientific Memoirs" by officers of the Indian Medical Service has recently made its appearance. The volume before us has no reason to fear a comparison with the eleven admirable volumes which preceded it. A mention of its contents will make this clear: (1) The Characters and Relationships of *Azelaia*, by Major D Prain, IMS, LL.D., of the Botanical Gardens, Calcutta, (2) Inoculation of Malaria by Anopheles, by Captain C J Fearnside, (3) Zoological Gleanings from the R I M Ship *Investigator*, by Major A. W. Alcock, IMS, LL.D., of the Indian Museum, (4) Some Observations on *Spirillum Fever*, as seen in Monkeys, by Captain G Lamb, M.B., IMS, of the Bombay Laboratory, (5) the Anatomy of the roots of *Phoenix paludosa* (Roxb.), by Captain A T Gage, IMS, Curator of the Herbarium at the Sibpur Gardens, (6) Practical Notes on Sanitation in India, by Major E Roberts, IMS.

We can only notice a few of the articles in this volume, not from any want of appreciation of those not noticed, but simply because the reviewer is not competent to deal with such purely technical subjects as three of the articles discuss.

The first article therefore to be noticed is that by Captain Fearnside, IMS, on his experiments in producing malaria by means of infected mosquitoes, to which we have already referred in these columns (March 1901, p 105).

Captain Fearnside is of opinion that many of the febrile attacks which are met with in the cold season are relapses from former infection, but at present it is not possible to differentiate between the hæmamoeba of relapse and that of fresh infection. In India it is impossible to select any person who can be said never to have been exposed to malarial infection, hence all that Captain Fearnside could do was to

select persons who were in good health and certainly had had no fever for a long time. The mosquitoes were hatched from larvae in a bottle. There are six varieties of anopheles to be found in Rajahmundry, but though a description and plate of the species used in the experiments is given, it is not identified by name. Details of seven experiments are given, the first in Captain Fearnside himself we have already given an account of. In case No. II, an anopheles, fed on the same blood (containing spring-tertian parasites) as in first case, fed on Head Waider Swami on 28th December 1900, and on 18th January 1901, he developed fever, and his blood disclosed spring-tertian parasites. Case III, a hospital peon, bitten by a mosquito (which had been fed on blood containing parasites tertian, type of fever quotidian) on 27th December developed quotidian fever fifteen days after, and his blood contained tertian parasites. Case IV inoculated on 26th December (by the same anopheles as in case III). He developed fever on 20th January of tertian type. It is remarked that the tertian parasites of the original quotidian ague (*ie*, repeated tertian) gave rise to quotidian in case III, and tertian in case IV. Case V was inoculated on 28th December from crescent-derived sporozites (summer-autumn) and developed fever on 9th January. Case VI was inoculated on 28th and 29th December by the same anopheles as case V and developed fever on 13th January. The other case is not detailed, as it was not ready at the time the article was written. The periods of incubation in the four cases of spring-tertian were 16, 21, 15 and 25 days, and in the two summer-autumn cases 12 and 16 days. Temperature charts of each case are also given.

Captain Fearnside gives as his opinion that the two phases of the life of the malarial parasite in man and in the mosquito is not the whole story. He believes that the parasite is trimorphic, and that a third phase (extra corporeal) is yet to be discovered.

The next paper is by Captain G. Lamb, I.M.S., on "Some Observations on Spuillum Fever, as seen in the monkey (*macacus radiatus*)" which confirms and in several directions extends the observations of Vandyke Carter in Bombay in 1877.

It is not possible here to give a *résumé* of this important paper, but we may quote the following conclusions (p. 93) —

(1) "One attack of spirillum fever in the monkey protects from a second infection. This immunity lasts for but a short time. Monkeys from which the spleen has been removed shortly after the crisis of an attack are also immune to a second attack for at least a short period of time."

(2) "In the blood and lymph both of highly immunized monkeys and of monkeys recently recovered from an attack of spirillum fever, anti-bacterial substances are present and can be demonstrated both *in vivo* and *in vitro*."

(3) "The blood plasma of a highly immunized animal confers protection on a spleenless monkey when inoculated at the same time as the spirillum material."

(4) "Fresh monkeys from which the spleen has been previously removed may pass through an ordinary attack of spirillum fever, ending in recovery by crisis and complete disappearance of the spirilla from the blood." "From these facts it would, therefore, (writes Captain Lamb,) appear certain that there must be some relation between the production of anti-bacterial substances and the production of the immunity which I have shown is enjoyed by the monkey as the result of an attack of spirillum fever, and also it would appear certain that the spleen has not the important function which has been assigned to it by some observers in the destruction of the spirillum organism."

Text-book of Medicine—Edited by G. A. GIBSON, M.D., F.R.C.P.E. Two volumes. Young J. PENTLAND. April 1901.

THESE two handsome volumes represent a form of medical work which is becoming increasingly common, *viz*, a comprehensive text-book, which is the result of the united efforts of several writers who have claims to be considered as specialists in the subjects on which they undertake to write. That Dr. Gibson has succeeded in gathering together a band of such writers and in producing a very admirable text-book on general medicine there is not the slightest doubt. The book consists of two moderate-sized volumes in royal octavo, and is in every way admirably printed and got up, in the way we have become accustomed to associate with the books published by Mr. Young J. Pentland.

A difficulty lies, however, in classifying the volumes. It has no pretensions to be a *System* like that of Clifford Allbutt, or a work of reference like Quain, on the other hand, it is a class above the ordinary text-book for the student. We incline to think that it will be found of great use by the practitioner and the senior student, especially the student going up for the higher examinations. To turn now to the contents. A glance through the list of authors shows that the Editor has made a good selection and has entrusted special subjects to men whose utterances on the subject are entitled to be listened to with respect.

We suspect that the book has been several months longer than the Editor intended in preparation, for in several places we note that papers written within the last year or so are not noticed as they might naturally be expected to be.

We propose to confine ourselves to noticing some of the articles on tropical disease in these volumes. We observe that they have almost all been entrusted to Dr. Patrick Manson, and therefore into very good hands. The wonder indeed is how Dr. Manson manages to write so many chapters in many books without repeating himself. One would expect, for instance, that the chapter on Dysentery would be a repetition of the chapter in his "Tropical Diseases," but it is not, in fact, in many respects it is the most

satisfactory chapter on dysentery that we have ever read, though it is distinctly short. We note that Dr. Manson writes much less enthusiastically about the amoeba and its causal relation to dysentery and to liver abscess than was the custom a few years ago. We note, too, that dysentery, liver abscess, and pneumonia appear among the general diseases along with enteric fever, typhus or tuberculosis, instead of being classed as local diseases of organs.

As regards the etiology of liver abscess there is not much new to record. We note that the fact of the much greater rarity of liver abscess in the natives of India, among whom dysentery is so common, is insisted upon, though it is said that the reason for this difference is not very obvious. In fact the narrow view that there is a necessary connection between dysentery and hepatic abscess is giving way to the broader view that hepatic abscess has a wider causation, and may be the result of any ulcerative lesion of the intestinal tract, dysenteric, enteric, appendicitic, tubercular or syphilitic, as is urged in the last Report of the Sanitary Commissioner with the Government of India. It is worth noting that liver abscess was a very rare accompaniment of the abundant dysentery of the South African War, and Major Yarr, R.A.M.C., stated that it was practically unknown in the dysentery of the Orange River Colony before the war.

The chapter on Malaria is also good, and we note that Dr. Manson is still on the look out for some other way of acquiring malaria than the direct injection by the mosquito. He writes "the malarial parasite is sometimes, if not always, injected into man by the mosquito during haustellation." It is possible that such bodies as Ross's "black sausage-shaped bodies" might be latent in soil or water, or through the air get access to man, other vertebrates or the mosquito. The other chapters in this book are almost all equally good and authoritative, that on diabetes by Dr. R. T. Williamson is brief and excellent. Diseases of the liver are well handled by Dr. Hale White. The disease of the nervous system are also adequately dealt with, chiefly by Dr. Risien Russell. One chapter in the book struck us as very meagre: this is the one on Cerebro-spinal Fever, which is probably to be accounted for by the comparatively rare recognition of the disease in England.

On the whole the book is an excellent one, and is thoroughly reliable, and deserves a very considerable degree of success.

SOME BOOKS ON THERAPEUTICS

1. **Physician's Manual of Therapeutics**—PARKE DAVIS & Co, London, 1900
2. **Annual Report on the Year 1900**.—E. MERR, Darmstadt, 1901

3. **The Physician's Pocket Book**—PHILLIPS & Co, Ltd, Bombay, 1901

The first of these little volumes is a handsomely got up book compiled for the use of physicians, and refers especially to the elegant pharmaceutical products of the well-known firm of Messrs Parke Davis & Co, of London and Detroit. It gives at a glance all the available forms of pharmaceutical preparations of drugs now in use. Secret remedies are rigidly excluded from its pages, and the exact formulæ of all compounds are given in detail. The well known excellence of the preparations of this firm is a guarantee that the physician can with confidence prescribe the drugs recommended in this useful little volume.

The second book on this list is the well-known annual report of the famous German firm on the drugs of the past year. In it we find the literature of each drug fully and adequately referred to, with full and complete quotations from the medical literature, especially of Germany. The physician who consults this book cannot fail to find much of interest and value to him in his practice.

The little pocket book published by the well-known firm of Phillips & Co, Bombay, contains notes on new remedies, on urinary testing, posological tables and much other useful information for the practitioner. We note that Messrs Phillips & Co stock all the most important serums for immediate supply.

The Extra Pharmacopœia.—By MARTINDALE & WESTCOTT Tenth edition, 1901 H. K. LEWIS

THIS admirable and very well known volume needs little recommendation at our hands at this stage of its career. The book has now reached its tenth edition, this being the second edition published since the appearance of the new British Pharmacopœia in 1898. The chief feature of the present edition is the inclusion of the drugs of the Indian and Colonial Addendum to the B. P. A synopsis of several pages gives a résumé of all the drugs in this Addendum and their therapeutic properties. We note that the authors are not very enthusiastic as to the value of the Indian and Colonial additions. Such suggestions, they write, of "alternative substances" are to the prescriber even a dangerous innovation. "Sesame oil and Arachis oil are very good bland oils, and if in India they may be employed, well, as substitutes for olive oil, where is the line to be drawn?" They question if many of the drugs will meet with any general recognition even in India and the Colonies.

The rest of the little volume appears to be mostly unchanged, but many references to the literature of the drugs have been added, some of which are of very recent date.

In every way the volume maintains the high repute it has already gained as the busy practitioner's *vade mecum*.

A Manual of Surgical Treatment. Part IV —
By W. WATSON CHEYNE, F.R.C.S., and F. F. BURGHARD, F.R.C.S. LONGMANS, GREEN & Co., London and Bombay, 1900

PRIOR to this part three volumes of this admirable work have been published, and the first part has already reached its second edition. It is the intention of the authors to complete it in six volumes.

The part under review treats of the surgical affections of the joints and spine. The first section deals with the *injuries* of joints, including dislocations, sprains and wounds. The second section comprises the *diseases* of joints, including inflammation, tubercle, syphilis, nervous affections, rheumatoid arthritis, loose bodies and ankylosis. The diseases of individual joints are discussed, just as in the case of injuries of particular joints.

The surgical affections of the spine are described under the headings of injuries, spinalifida, kyphosis, scoliosis, tubercle, and a mixed chapter includes spondylitis, osteomyelitis, actinomycosis, new growths, hysterical spine and sacro-coccygeal tumours.

The volumes are fairly uniform in size, convenient in shape, clearly printed and well illustrated. The key-note of the whole work is treatment. It is quite different from the type of standard text-book in which the compiler boils down much and varied information for the student preparing for an examination. There is no attempt made to give the reader a digest of the anatomy, surgical and comparative anatomy, physiology, chemistry, pathology and other cognate sciences, which usually results in producing mental dyspepsia. A full dissertation on the symptoms, diagnosis and treatment is not even attempted. The work is intended for those who have put examinations behind them, and who are engaged in the daily practice of the science and art of surgery. The authors have confined themselves chiefly to giving full and detailed information of the methods of treatment which they have found to be the best in their own experience. They deal with every stage of a disease from start to finish, *e.g.*, take tubercle of the hip and knee. After general chapters on tuberculosis of joints, and ankylosis, &c., tubercle of the hip or knee is described in four stages, with details of the clinical course of each stage, and the appropriate treatment for each stage—hygienic, medicinal, with apparatus, or operative. The chapters on the spine are very good, and there is a very useful appendix on medical gymnastic exercises. These exercises are fully illustrated and described. Due acknowledgment is made to Dr. Percy Lewis, from whose book on *the Relief and Cure of Spinal Curvatures* this appendix is taken *verbatim*. The authors are to be congratulated for producing a work that supplies a real want which no other work on surgery adequately fulfils.

An Atlas and Epitome of Diseases caused by Accidents—By DR. ED. GOLPIEWSKI of Berlin. Translated by PEARCE BAILEY, M.D., W. B. SAUNDERS & Co., Philadelphia, 1900. Pp. 549, 40 Coloured Plates, 143 Illustrations. Price 4 dollars.

ALTHOUGH this type of work is not uncommon in Germany, yet it is novel and unfamiliar to the medical profession of Great and Greater Britain. This is the natural result of the different conditions that obtain in the two countries as regards employers of labour and their employes in the case of accidents and the disabilities caused thereby. The book is written ostensibly from the standpoint of the German Accident Insurance Law, and its purport is to present a systematic description of the sequelæ of injuries caused by accidents. In ordinary cases the author deals with cases some three or four months after the injury, when the patient leaves the surgeon's or physician's hands either to resume work, or to obtain a certificate of disability, as the case may be. In traumatic nervous diseases the cases are presented at a much later period, as might naturally be expected. The author's method may be illustrated by the two following cases taken at random. He describes clearly and briefly the history and symptoms of a case of left facial paralysis with atrophy of the left side of the face following fracture of the base of the skull. Then he details the remote symptoms, both objective and subjective, and gives his decision thus—"Incapacity for self-support during the time of treatment was reckoned at 100%. five months after the accident, at 45%, and later on, after resuming his trade, at 20%." In a case of compound fracture of the skull resulting in paralysis of the right upper and lower limbs, relieved by operation, he sums up as follows—"At first his incapacity for self-support was reckoned at 100%, on the 18th November, 1888, it was 33½%, on the 29th December, 1889, his capacity for self-support was fully re-established. About one year later epilepsy developed, accompanied by mental disturbances. Frequent institutional treatment was necessitated. Incapacity, 100%."

Both these cases are illustrated by beautifully executed coloured sketches. The illustrations are a very marked feature of this work, not only as regards number and variety, but also as to artistic merit and sound judgment in selection. In addition to coloured plates there are illustrations from sketches, sole-impressions, skiagraphs and photographs. The author's work is based on an experience of 5,245 accident cases, extending over a period of 13 years. Nor is such an experience the usual haphazard one of the average British or American hospital surgeon, but it is an experience stimulated and severely controlled by the German State Insurance Bureau.

The Workmen's Accident Insurance Law was passed in 1884 in Germany, and it has been frequently amended since. Workmen and employés, except such as are in commercial and domestic service, are insured against accidents incident to their employment, provided their annual wages do not exceed 2,000 marks. Such workmen when injured in the course of their employment are guaranteed insurance by an association of the owners and employers in the various trades. They are given free medical attendance, and are eligible for two-thirds of their monthly wages from the fourteenth week after the accident, if they are still unfit for work. In a fatal case the widow is entitled to free burial expenses and full indemnity to herself and children until the latter reach 15 years of age. After the claim has been settled, the amount of compensation is always liable to readjustment should the injured person's condition either materially improve or deteriorate. This is, of course, a great safeguard for the employer of labour in cases of malingering or neurasthenia, when the improvement is magical once the case has been settled in court. There is a regular graded list of injuries and indemnities from 10 per cent for a hernia, 25 per cent for the loss of an eye, up to 100 per cent for severe head injuries, the loss of all fingers and toes, etc. The effect of this law has been to give a great stimulus to the exact study of injuries and the precise estimation of their after-effects.

In the German system everything except the extent of the injury is fixed and uniform, compare this with the working of the Employers' Liability Act in Great Britain, where nothing is fixed save abstract principles, and where capricious and contradictory verdicts result from the diverse mental attitudes and experience, or want of it, of the judge, lawyers, medical men, and jury, or from the personal attractions of the claimant—especially if of the gentle sex. In the British system the suitor claims from three to ten times what is just compensation or what he is likely to get, and once he has got his verdict he is safe to enjoy his possibly ill-gotten gains. The German system does away with all this, but it does a great deal more, it strikes a shrewd blow at the roots of that curse,—the contingent fee system, a scheme in which the lawyer is tempted to be rather more than an advocate, and the medical man rather more than an expert,—it tends to make partisans of them both. A scheme which may assume the form of a nefarious partnership between the litigant and the lawyer, a scheme of touting and speculation, in which the lawyer gets the lion's share and the injured one or his family have to content with the pickings. Both employer and employé are impoverished to provide a livelihood for the overstocked legal profession. It is claimed for this book that this is the first attempt to deal with the subject as a

whole. The author has succeeded wonderfully well in some points, and has fallen short in others. The work is divided into two parts, of which the first deals with injuries in a general manner, whilst the second treats in detail injuries affecting special structures and regions of the body.

The first part fails in several respects. It is too condensed for a general consideration of the subject, and yet much that is unnecessary for the medical practitioner is introduced. The anatomical and physiological explanations, and the descriptions of treatment, should be ruthlessly expunged, a dissertation on the structure and functions of bone may serve to enlighten the lay mind, but it is superfluous for the medical man who has had this instruction much better and more fully put to him in the lectures of his student days, and who has standard textbooks of reference. It is a mistake to attempt to combine a popular book for the laity with one intended for the medical profession in quite a special line. The numerous references from Part I to Part II have an irritating effect. The use of "hypertypical" for "exaggerated" with reference to the knee-jerk reveals the transposition of the translator, but the translation has been very well done in spite of some blemishes due to the use of "Americanese."

The excellence of Part II, which constitutes the bulk of the work, redeems the defects of Part I in great measure. The injuries of special structures are described under sections dealing with the head, vertebral column, thorax, abdomen, upper and lower extremities, and each of these is sub-divided into various sub-headings. Want of space permits of only one reference. The section on Functional Neuroses is very much to the point, as the following quotation shows—"Work is usually the best therapeutic agent for a hysteric or neurasthenic working-man, and, for this reason, in estimating the insurance allowance it is advisable to avoid a high rate, whenever feasible, in order to compel the patient to work. A high rate of insurance encourages the patient to believe himself to be seriously ill, whereas if he is obliged to work, his morbid conception will be overcome, and his recovery will ensue. It is characteristic of accident-neuroses that the mind of the patient is almost altogether occupied with questions relating to the accident and all that appertains to it, and to the rate of insurance to be allowed." Oppenheim's work on "Traumatic Neuroses" and the doings of his adherents meet with well-merited strictures at the hands of the author.

Treatment of Simple Fractures.—By WILLIAM H. BENNETT, F.R.C.S., Senior Surgeon to St. George's Hospital, London. LONGMANS, GREEN & Co 1900. Pp 41 4s 6d

THIS is a re-published address delivered in opening a discussion at the meeting of the British

Medical Association held at Ipswich in August 1900, and contains as an appendix, a summary of the opinions and practice of about three hundred surgeons. It is in fact an impartial analysis of these opinions and shows that, when collected at all events, that is, up till recently, the treatment of simple fractures by massage and by operation had not met with much acceptance in England. A change has come about in the treatment by early massage, for which Mr. Bennett in England and M. Lamselongue in France are largely responsible. The operation treatment—of simple fractures—does not make much headway, partly because of the dangers of sepsis, and partly because good results can be obtained with less risk without operation. These good results are better and can be more speedily obtained, Mr. Bennett maintains, by the use of massage and early movement. He found that 50 p.c. of the London surgeons and 70 p.c. of provincial surgeons had had no experience whatever of the method. Of those who had, 31 were in favour of it, and 9 were against it. The latter, however, did not appear to have personally used it, while the former had used it and spoke in strong terms of approval of it. For full details of the method the reader must go to the *Lancet* in which Mr. Bennett's paper appeared. It would have been useful to include them with this address.

Practical Points in Gynaecology.—By H. MACNAUGHTEN-JONES. BAILLIÈRE, TINDEL & CO.

As Dr. Johnson remarks "He is by no means to be accounted useless or idle who has stored his mind with acquired knowledge, and details it occasionally to others who have less leisure or weaker abilities." This apparently is the author's excuse for reproducing, in book form, six articles from the *Edinburgh Medical Journal*, outcome of a loving commission to write from the Editor of that journal. However edifying the original papers may have been to some of the readers of the above journal, they had at least the means of turning to more congenial matter. But he who proposes reading these "Practical Points" condemns himself to a "fertile wandering" over the field of gynaecology, in the course of which he will gather very little knowledge and some opinion of doubtful value.

The opening chapter consists of platitudes on gynaecological aetiology, and the next on some pitfalls in gynaecological diagnosis is equally uninteresting and wanting in originality. The disorders of menstruation are considered in the third chapter, in which an excellent faculty is displayed for reproducing the commonplaces of the text-books and enumerating the latest products of the druggists' store. We do not propose noticing the uninteresting essays on "Conservatism" and on the relations of insanity to affections of the female genitalia. The last chapter on myoma will be found the least

uninteresting. It does, at any rate, fairly summarise current opinion on the question of operation for myoma.

It is to us matter of surprise that the author should have attempted to secure any degree of permanency whatever for really ephemeral journalistic contributions. But of the making of books there is no end.

Ophthalmic Surgery—By R. B. CARTER, F.R.C.S., and W. A. FROST, F.R.C.S.—A Clinical manual, for practitioners and students. 2nd Ed., pages 556. Published by Cassell & Co. Price 9s.

THIS is a clearly and concisely written little book without padding and covers quite enough ground for those for whom it poses to be written, and it well represents the practice of the present day. From its clearness and conciseness, and from the fact that it covers not too much ground but quite enough, we should say that it should rank as one of the best of students' text-books. We see that the authors recognise extraction of the lens in the capsule to have many advantages in those cases which are suited to such a proceeding, which cases are as with all surgeons outside India, regarded as very few. Still the authors go further in this respect than most non-Indian surgeons.

The one weak point in the book is the fact that from an anatomical and from a pathological point of view it is not illustrated at all. Such illustrations as the practical part of the book contains might be selected from an instrument maker's catalogue. This is the very weak point of all small books on this subject. Imagine a student reading a book in practical ophthalmology without plates of pathological or even of physiological conditions of the fundus! All students' text-books on ophthalmology should be well illustrated, or should be supplemented by some such book as Jaeger's Atlas, which latter is too expensive for most students.

THE BOMBAY MEDICAL AND PHYSICAL SOCIETY.

The April issue of the Transactions contains many papers of interest. The first paper is by Major R. W. S. Lyons, I.M.S., on a case of *spastic paraplegia*, probably due to lathyrism. The patient stated that during the famine he ate almost exclusively of *leuca* (*Lathyrus Sativus*) or *kesari* as it is called in North India. A discussion followed, in which the well known fact was mentioned that some kinds of *Lumra* in horses are due to the prolonged use of this grain. Within the last four years we have seen dozens of cases of lathyrism—in the Shababad and Bhagalpur districts, where the crop is much grown. The nature of the poisonous material in the grain is still unknown.

Major L. F. Childe exhibited some pathological cases of interest, including tuberculosis of the pericardium and pleura, primary cancer in a cirrhotic liver, and renal calculus. The increased prevalence of tuberculosis in Bombay was commented upon by Lieutenant-Colonel W. K. Hatch, F.R.C.S., I.M.S., reported on five surgical cases, three of which were extensive epitheliomata on scalp, tongue, and face. An interesting paper followed by Dr. Ismail Jan Blahomed on the *Use of Surma by Natives of India*. Dr. Mahomed pointed out that there were many kinds of *surmas*, and though the word means "antimony," this drug did not at all enter into their composition. The word *surma* practically means collyrium.

Many *surma* powders are dark and heavy, some white and others red. The chief ingredient in all is metallic lead. The

load is heated and thrown into a decoction of myrabolans (*terminalia cheba'a*, a drug recently admitted into the Addendum to the B P for use as an ointment), it is then rubbed down into powder in a mortar. This process of heating the metal and dipping in myrabolans is repeated for seven days then the powder is rubbed in cold water for about a month for a few hours daily, then pearl or mother of pearl is supposed to be powdered with the mass. Then Borneo camphor is added, which gives the mass the property of producing a smart cooling sensation when applied to the eye. Menthol is often used instead of the camphor. Surma is put into the eyes with a peculiar kind of probe, made either of porcelain or of different metals. Another kind of surma is white, and is made with zinc, finely powdered, and rubbed up with lemon juice. Another eye preparation is *karal*, which is the smoke collected from burning incense mixed with *ghre*. It is used for the eyes of newly born babies and to protect weak eyes from the glare. Dr Ismail Mahomed noted that the practice of using surma becomes a habit, and its continued use leads to chronic congestion of the eyelids and dryness of the conjunctiva.

Captain H A L Howell, R A M C, also reported a case of multiple neuritis, probably toxic in origin in a soldier of twelve years' service, eight years in India. There was pigmentation of the face and neck, but no keratosis of the feet, dropped wrist and palsy of extensors of feet existed. He usually drank water, but occasionally beer. The canteen beer could not be examined owing to departure of the regiment, neither arsenic nor lead could be found in the urine. The case was certainly complicated by malarial infection, crescents were found, but the aetiology is obscure. The man recovered enough to be invalided to England.

Current Literature.

EXTRACTS FROM THE FOREIGN MEDICAL PRESS

(1) Antipyrin as a cause of Liver Cirrhosis.—From his experiments on frogs and rabbits, Marekwald concludes that the frequent injection of small doses of antipyrin cause chronic disturbance of the functions of the hepatic cells, and cirrhosis of the liver, larger doses cause an acute disturbance of the hepatic cells. Marekwald believes, with most modern pathologists, that the initial affection in cirrhosis is one of the hepatic cells, the connective tissue proliferation being merely secondary. In this view he agrees with Weigerts' theory of tissue proliferation, and is directly opposed to Siegenbeek van Heuvelom, who, like the older pathologists, considers that diffuse connective tissue proliferation is above characteristic of hepatic cirrhosis [*Muenchen med Wochenschr* No 130 of 1901].

(11) Trendelenburg's operation for Varicose veins.—Herz of Magdeburg agrees with Habs that resection of the Vena Saphena is not in itself sufficient, and now carefully seeks for all the small tributaries of the vein, and ties these too at the site of operation, which Habs fixes at the junction of the middle and lower thirds, the incision being transverse and from 6 to 10 c m ($2\frac{1}{2}$ to 4 in long). Since 1896 he has operated on 46 patients, of whom he has been able to examine 17 as to the final result of the operation. Of these in 14 there was a permanent good result, in 1 the result was doubtful, and in 2 it was unsatisfactory [*Deutsche Zeitschr f Chir*, January 1901].

(IV) Anaesthesia from intra-spinal injections. Schwarz of Agram finds that this can be better obtained when injections of Merck's *Tropacocain* are employed. With injections of cocain one sometimes gets nausea, vomiting, severe headache and elevation of temperature, but such undesirable results are absent when *Tropacocain* is used, while the anaesthesia is quite sufficient to allow of herniotomy, urethrotomy, &c, and a fortiori of any operation on the lower extremity being performed — [*Centralbl f Chir*, 9 of 1901].

(V) Idiosyncratic reaction to drugs.—The following case, which I have published in German in the *Muenchener medizinische Wochenschrift*, 13 of 1901, may be of interest to Indian readers. Miss S, 33, years

of age and appears to be perfectly healthy. In 1883, when in Berlin she suffered from diphtheria with post diphtheritic paralysis of the tongue, eyes, and upper and lower extremities, which completely disappeared after a "cure" at Bad Oeynhausen. In 1887 she suffered severely from influenza, but since then has remained well. After ingestion of quinine and after bathing in the sea she suffers from a urticariform eruption. This also appears on the arms and neck, as the result of exposure to the sun's rays, when she wears a light muslin blouse in summer. 2 In her case *Morphia* acting merely as an excitant within half an hour after injection of this drug she becomes "nervous" and anxious and fears that she is going to die. 3 On taking *strychnia*, she suffers from an intense palmar and plantar itching, which becomes general and intolerable if the dose be repeated. That suggestion has naught to do with these phenomena, appears from the fact that when any of the abovementioned drugs is given to the patient without her knowledge, and disguised as to taste as well as may be, she always reacts to the special drug ingested.

(VI) A good stain for flagellate bacteria.—Peppeler of Erlangen finds that the following mordant is of service in staining "all flagellum bearing bacteria" — 20 grains of tannin are dissolved in 83 grains of water, and to this solution are added 15 grains of a 1—40 solution of chromic acid—the mixture being allowed to stand for four to six days, and then being filtered. The preparation which it is desired to stain is left in a quantity of the mordant for one to two minutes, and then stained with carbolfuchsin or carbolgentian.

[*Centralbl f Balt* No 8 of 1901]

(VII) Fixed ideas, Phobias and Obsessions.—These may, in the opinion of Has Rovec of Prague, be classed thus.

Fixed ideas properly so called (*Zwangsvorstellungen*) corresponding to the *phrenolepsia* of Westphal and Meschede, which are almost always signs of degeneration. As a rule, these do not lead to a condition which could be described as a Psychosis, but, nevertheless, their treatment is by no means satisfactory. Those ideas which we meet with in those who are of a neurotic family and which are "neurasthenic," and obtain only for a time.

Those ideas which are the result of poisoning of the cerebral cortical ganglion cells [*Datura*], or of epilepsy or hysteria and their action on the higher nervous system.

Those ideas which herald the onset of a psychosis such as Paranoia, or of an organic nervous disease such as general progressive paralysis.

[*Wiener med Wochenschr* No. 11 of 1901]

Detachment of the retina.—Winselmann treats such cases, whether traumatic or idiopathic, by injections under the conjunctiva of a sterilised 2% solution of Na Cl, half a Pravaz syringeful (and sometimes a whole syringeful) being injected about every third day. After the injection a firm compress is applied, and the patient is kept in bed. In several cases a cure has been obtained by this means [*Die Ophthalm Klinik* No 3 of 1901].

W D SUTHERLAND

Correspondence.

THE ACTION OF ATROPINE

To the Editor of "THE INDIAN MEDICAL GAZETTE"

Sir,—I shall be much obliged if you can find space in your next issue for the explanation I had to offer of the action of atropine used before cataract extraction in preventing prolapse of iris. It was in the MS of my paper published in your Special Ophthalmic

Number but has been omitted in the printing. I think it is a point of some importance, especially considering the unexpectedly divergent opinions expressed in the papers you have published. I discussed it under 'prolapse of iris,' and the paragraph omitted ran as follows—

"I believe, however, that there is another reason for atropine preventing prolapse. The existence of dilator fibres in the iris is a matter of long standing controversy, but Langley and Anderson's researches (*Journal of Physiology*, Vol. XIII, No. 6) decided their existence in the affirmative. If in a case of oculomotor paralysis in which the pupil is dilated, atropine be used, the pupil dilates still further, which shows that atropine cannot only paralyse the circular contracting fibres on the sphincter, but also stimulate the radiating dilator fibres of the dilator muscle. Atropine therefore causes radial traction upon the iris, this is exerted in every meridian. The pupillary margin being thus held taut prolapse of it in any one direction becomes almost impossible. One fact frequently observed makes me believe that atropine may act mostly, or at any rate first of all, by stimulating the dilator, rather than by paralyzing the sphincter fibres. In the cases referred to the pupil contracted after the incision was made although under atropine at the time. If atropine merely acts by paralyzing the sphincter, it is difficult to explain this, but if it acts by stimulating the dilator fibres one can understand the powerful reflex stimulus of the incision (and loss of aqueous?) causing the sphincter fibres to contract and overcome the dilator muscle."

Yours, &c,

BANKIPUR,
June 1901

F P MAYNARD, F.R.C.S.,
MAJOR, I.M.S.

PROFESSOR KOCH AND HIS CRITICS

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—Numerous accusations have been made against Professor Koch in the British Press to the effect that he has not sufficiently acknowledged the work of others, especially of myself, in connection with the mosquito theory of malaria. Will you give me space to call attention to his paper *Ueber die Entwicklung der Malaria Parasiten*, *Zeitschrift für Hygiene und Infectiösen Krankheiten*, 1899, in the opening sentences of which he gives the fullest and completest possible acknowledgment of my work?

It is also somewhat amusing to note that in many accounts of the mosquito theory the labours of Koch are almost entirely omitted while the hasty and meretricious writings of certain other observers, consisting chiefly of plagiarisms and observations "fudged" to obtain priority, are accepted as gospel. I should like to say that I have lately carefully studied these writings, and am of opinion that we owe to Koch and Daniels the first reliable confirmation of the Indian researches of 1895–8. It is unnecessary to add anything in defence of his recent work on this theory. His important discovery of the frequent presence of the parasites in Native children has been amply confirmed by several observers—in great detail by Annett and Dutton in their *Nigeria malarial report*.

Yours, &c,

LIVERPOOL,
1st May 1891

RONALD ROSS, F.R.S., F.R.C.S., D.P.H.

RHEUMATISM AND DYSENTERY

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—In connection with the comments made in the columns of the *Indian Medical Gazette* in some of the recent issues, regarding the superposition of rheumatism as a sequela of dysentery, I beg to forward my solitary experience.

Last summer was under my treatment a boy (Hindu), aged about twelve years, and suffering from acute dysentery. The attack was not a mild one, and he went on till the eighth day when double conjunctivitis appeared. It subsided under treatment. About the fourteenth day stools began to improve slowly and he to complain of pain in the knees. On the nineteenth day stools rather suddenly became fully feculent but the knee joints both became distended and affected with all the symptoms of acute synovitis. The heart was all right. It took him a long time to recover, but the recovery was complete.

Yours, &c,

MADARIPUR
15th May 1900

TARAKNATH DEB,
Assistant Surgeon

OBITUARY

LIEUT. COL. G. L. WALKER, I.M.S.

It is with sincere regret that we have to announce the death, at Madras, on the 31st May last, of Lieut. Colonel Walker of the Indian Medical Service. Colonel Walker's death was a particularly sad one on account of its being due to septic poisoning,

contracted during the performance of an operation upon a patient in hospital. The attack was of a very acute nature, death occurring on the sixth day of illness. Previous to that Colonel Walker had been in excellent health, and was about to start to Bangalore for a short holiday.

The deceased officer, who was 52 years of age at the time of his death, joined the service in 1876. With the exception of two years military duty with the 29th Regiment, M.I., he spent the whole of his service in civil employment, holding a number of up-country appointments, including the two hill stations of Coonoor and Ootacamund. In 1895 he was appointed to a district in Madras, since which time he had been continuously employed in the Presidency town. At the time of his death he held the appointment of surgeon of the fourth district, and Professor of Materia Medica in the Madras Medical College.

Colonel Walker was distinguished throughout his service as a hardworking, zealous and conscientious officer. Although fond of his profession and a sound practitioner, he was always at his best when engaged in work of an administrative character, for which he, unlike many of his professional brethren, had a particular liking. *The Madras Mail*, in its obituary notice, dealing with this phase of Colonel Walker's character, pointed out that the deceased officer made a name for himself "by his businesslike management of the various institutions that he was connected with during his 25 years of service. He had a keen eye for improvement and reform everywhere, and, but for lack of funds, his able and persistent advocacy of hospital reform in Black Town would have borne fruit long ago." Later as a Municipal Commissioner he did much good work for the city of Madras by the excellent advice he gave in all matters pertaining to local sanitary improvement.

Having served in a number of districts, the late Colonel Walker made a large circle of friends, by all of whom he was highly esteemed and respected, and by all of whom his death will be deeply regretted.

The deceased officer leaves a widow and four children, one son and three daughters. It is sad to learn that all of these were in England at the time of his death, and consequently unaware of the fatality that had befallen him.

ASST.-SURGEON ZAHIRUDDIN AHMAD

Assistant-Surgeon Zahiruddin Ahmad, Khan Sahib, late Civil Medical Officer of Bogra, died in his residence, at Calcutta, on the 25th May 1901 after prolonged suffering from enlargement of the spleen and liver, which he contracted in Bogra. He was 53 years old, and 30 years in service when he died. He had his early education in the General Assembly's Institution. He joined the Medical College, Calcutta, in 1866, and obtained the diploma for 2nd L.M.S. in 1871. While in the College he obtained honours in several subjects. His first appointment was in the district of Burdwan, in charge of an "endemic fever" dispensary. He held medical charge of the subdivision of Barh and that of the Calcutta Police Hospital before he was appointed Teacher of Surgery, Campbell Medical School, in succession to Rai Bahadur Ramnarayan Das. For 19 years he held that post and did excellent work as a surgeon. He was appointed an Honorary Assistant-Surgeon to His Excellency the Viceroy and a Fellow of the University of Calcutta. He had written a book on Surgery in Bengali, which was adopted as a text-book for the Vernacular Medical Schools in Bengal. He was Editor of the *Vish-darpan*. After his transfer to Bogra he was made a Khan Sahib in recognition of his services.

Service Notes.

THE present day is full of schemes of Army Reform, and the much maligned Army Medical Corps is being made the sport of a large number of would-be constitution makers.

THERE is a strain of inaccuracy and exaggeration in many of the criticisms which the leading London medical papers allow to fill their columns. Direct incitements to students to boycott the service have even appeared. One of the most talked of documents purporting to reform the service is that issued by the small body of members of the British Medical Association who form the "Sub Committee of the Parliamentary Committee." With many of its recommendations as to undermanning, insufficient pay, insufficient professional inducements, seniority promotion, and competition with civil life, we may agree, but probably the paragraph which was most read in India was the one in which it is gravely suggested to try to rescue one service by ruining another.

A MORE astonishing attempt to rob Peter in the hopes of paying Paul, we have never heard of. We have already received numerous letters aghast at the prospect and urging us to emphatic protest. We do most emphatically protest against any attempt at amalgamation of the Indian Medical Service with the Royal Army Medical Corps. The attractions to the medical student of the two services were ever distinct, [the man who entered the

R. A. M. C. did so in full view of the fact that he was to be a military medical officer for the whole of his service. We have no hesitation in saying that 90 per cent. of the men who enter the I. M. S. do so with a hope of entering civil employ and with a knowledge that if they prefer a military life, they can look forward to a not unpleasant time as a regimental Medical Officer.

To amalgamate would be to swamp and drown any advantages of belonging to the Civil Department of the I. M. S. If such violent change is wanted, we would far prefer to see the handing over the whole of India to the I. M. S. Then the military medical service of India would have control over the British and Native Troops and a career worth going in for would be assured to the medical man who wished to remain in military employ. The advantages are manifold, not the least being the way such a homogeneous service would work out in the case of war in India. The corps in the Field Forces would have plenty of medical officers and the cautions would not be denuded. But we do not wish to pose as reformers—we only desire to state that from what we have learnt of the views of Indian Medical Service Officers we believe that they are absolutely and unitedly opposed to the idea of amalgamation.

It is sad to hear that Lord George Hamilton is not in accord with the Government of India in holding that the Superintendents of the new Central Lunatic Asylums should be drawn from the Indian Medical Service. He has, however, shown his wisdom in sanctioning the five appointments asked for.

WE note that the Secretary of State admits that even under present arrangements, when, as we all know, the Indian Lunatic Asylums are generally dilapidated and in need of much repair, yet the proportion of cures is greater and the mortality less than in English asylums. This we can well believe after reading the revelations as to the insanitary state of the big London asylums which we refer to elsewhere. Now suppose a Medical Superintendent is imported from London, he would have to spend a couple of years in learning the language and ways of the people of India, before he would be of any use, for lunatics of all people require a medical man who knows their language and ways, and if a Medical Superintendent passes his first couple of years in military employ all over India we cannot see that he is any the worse for it, in fact he has gained an experience of Indian life and ways that will remain of the utmost benefit to him.

Our readers have often heard of the famous female Medical Officer in the Army, Dr. Barry, who rose to the rank of Deputy Inspector General. The reason for her passing herself off as a man has never been discovered—but strange as it may appear her sex was apparently never officially known till her death. This is the more strange as the secret was a pretty open one, as an allusion on page 324 of *Mrs. Jenson's Journal* makes abundantly clear. This delightful book is a journal written by a lady in India in the years 1826–30, and the passage we refer to shows that Dr. Barry's sex was no secret to many people in India at that time.

THE services of Captain C. H. Watson, I. M. S., are replaced at the disposal of the Military Department, and those of Major G. T. Mould, I. M. S., are placed at the disposal of the Central Provinces.

THE growing interest in the improvement of Medical Institutions in Bengal is attributed in the Government Resolution to the contagion of Colonel Hendley's enthusiasm.

LIEUTENANT COLONEL C. S. RUNDLE, I. M. S., Civil Surgeon in Burma, has been granted three months' extension of leave. We notice that Lieutenant Colonel Rundle has been lecturing on calf vaccination at the London School of Tropical Medicine.

CAPTAIN J. D. S. FAYRER, I. M. S., acts as Professor of Hygiene, Medical College, Madras, during the absence of Major A. F. Grant, I. M. S., who is acting as Sanitary Commissioner for Lieutenant Colonel W. King, I. M. S.

THE following I. M. S. officers in civil employ, Madras, were on leave on 1st June 1901—
Surgeon General D. Sinclair (to return 9th July 1901)
Lieutenant Colonel H. Allison, I. M. S. (to return 5th August 1901)
Lieutenant Colonel T. J. Hackett Wilkins, I. M. S. (to return 15th July 1901)
Lieutenant Colonel W. G. King, C. I. E. (to return 3rd December 1901)
Lieutenant Colonel W. A. Lee, I. M. S. (to return 20th March 1903)
Lieutenant Colonel R. Pemberton, I. M. S. (to return 9th June 1901)
Lieutenant Colonel A. T. L. Patch (to return 19th June 1901)
Lieutenant Colonel A. J. O'Hara (to return 4th July 1902)
Major F. I. Crawford (to return 28th November 1901)
Captain C. J. Fearnside (to return 11th October 1902)

Captain G. G. Gifford (to return 2nd October 1902)
Captain C. Donovan (to return 5th March 1902)
Captain C. H. L. Palk (to return 2nd September 1902)
Captain R. H. Lilliot (to return 4th July 1901)

THERE are 49 sanctioned appointments in the Madras Civil Medical Department, 26 names were borne on the list on 1st June and of these 24 were absent.

WE note that the following Medical Officers, I. M. S., had not on 1st June yet returned from temporary military employment, viz., Captain R. K. Mitter, Captain J. H. Foulkes, Captain T. E. Watson, Captain C. G. Webster, Captain A. N. Fleming, Captain H. Kirkpatrick and Captain W. Lothbridge, all of Madras.

CAPTAIN J. B. SMITH, M. B., I. M. S., at the close of the Mathern mission was appointed to act as Civil Surgeon of Surat.

CAPTAIN H. W. EPPICK, I. M. S., has been granted two and a half months' privilege leave from 1st June, and Major F. W. Thomson, I. M. S., of 2nd Goorkhas, acts as Civil Surgeon, Dohra Doon.

LIEUTENANT COLONEL J. ANDERSON, I. M. S., becomes a Civil Surgeon, 1st class, *vice* Lieutenant Colonel Willcocks, I. M. S., retired, and Lieutenant Colonel J. H. Sweeney, I. M. S., *vice* Lieutenant Colonel J. McConaghey, I. M. S., promoted.

LIEUTENANT COLONEL W. QUENTIN, I. S. C., acts as Secretary to the Board of Examiners in Native languages, *vice* Lieutenant Colonel G. S. A. Ranking, I. M. S., gone on leave.

COLONEL T. J. MCGINN, I. M. S., is permitted to retire from 4th May 1901.

MAJOR C. M. MOORE, I. M. S., took medical charge of the Mewar Residency on 5th May from Major H. R. Woolbert, M. B., I. M. S.

LIEUTENANT R. STEVEN, I. M. S., has passed the L. S. in Urdu.

CAPTAIN F. R. PARRY, I. M. S., is granted leave on private affairs for one year.

THE services of Captain A. F. Berry, I. M. S., are replaced at disposal of the Military Department.

MAJOR V. G. DRAPER BROCKMAN, I. M. S., is posted as Agency Surgeon in Bundelkhand.

MAJOR J. R. ROBERTS, I. M. S., F. R. C. S., is posted as Residency Surgeon, Indore, *vice* Lieutenant Colonel Gimlette, I. M. S., who has gone to Hyderabad to replace Lieutenant Colonel E. Lawrie, I. M. S., retired.

MAJOR P. J. LUMSDEN, I. M. S., is posted as Agency Surgeon, Gwalior.

CAPTAIN J. W. GRANT, I. M. S., Residency Surgeon in the Persian Gulf, is granted three months' privilege leave from 15th June, and Assistant Surgeon J. A. Lobo officiates.

THE retirement of Lieutenant Colonel E. Lawrie, I. M. S., is gazetted from 17th May, that of Lieutenant Colonel F. J. Doyle, I. M. S. (Madras), from 7th April, and that of Lieutenant Colonel Hugh McCalmann, I. M. S., M. D., from 7th April.

MAJOR H. W. STEVENSON, I. M. S., becomes Civil Surgeon of Karachi, *vice* Lieutenant Colonel McCloghry, I. M. S., gone on leave.

MAJOR C. E. SUNDLER, M. B., I. M. S., Civil Surgeon of Gaya, had the largest number of major operations to his credit in Bengal in 1900.

LIEUTENANT COLONEL JOSHUA DUKE, I. M. S., becomes P. M. O., Residency District, *vice* Lieutenant Colonel Boakey, I. M. S., invalided home.

THE Punjab Government has shown their zeal for the economy of other people's money by cutting down an item of Rs. 5,250 due by the wealthy Patiala Raj for medical attendance, to Rs. 1,750, a rate of payment equal to Rs. 100 a day for attendance and Rs. 50 a day for detention. In this instance we understand that the Punjab Government interfered with the charges after the Council of Regency of the State had passed them.

THIS is not the only recent instance where the Punjab Government have claimed a say in the matter of fees earned by medical officers and offered by patients. Why a Government should claim the right to interfere between a patient and doctor and not between a client and his lawyer is hard to see. Both professional men are paid for services performed, and as to the amount only a third class European lawyer in Calcutta would accept the above

amount from the most wealthy and powerful Maharaja in the Punjab

WE congratulate the following Medical Officers who are mentioned for good work in General Gascolee's despatch, dated Pekin, 17th January 1901 —

Colonel J B Bookoy, I M S, P M O
Lieutenant-Colonel L A Waddell, I M S
Lieutenant-Colonel D B Spencer, I M S
Lieutenant-Colonel G E Fooks, I M S
Major W W White, I M S
Major H F Whitechurch, I C, I M S
Major J M Reid, R A M C
Major H L Cree, R A M C
Captain W H Kenrick, I M S

LIEUTENANT COLONEL C C VAID, I M S, is posted to the Farrukhabad District.

MAJOR R J MARKS, I M S, and Major J Garvie, I M S, are graded as Civil Surgeons, 2nd class, and posted to Mirzapur and Sitapur respectively

WE regret to hear of the death at Shanghai of Lieutenant Colonel E H. Damla, I M S. Lieutenant-Colonel Damla went out to China last year in charge of No 66 Native Field Hospital. He was an L.R.C.S. of Edinburgh (1878), and entered the Madras Medical Service in September 1878

MAJOR W H CORKERY, I M S, is appointed Civil Surgeon, Ahmednagar, on return from leave

MAJOR H W STEVENSON, I M S, acts as Civil Surgeon of Karachi, *vice* Lieutenant-Colonel McCleghry, I M S, and Captain H Burnett, M B, I M S, is appointed Civil Surgeon and Superintendent, Medical School, Hyderabad, Sind

MAJOR A V ANDERSON, M B, I M S, acts as Civil Surgeon of Nasik in addition to his own duties.

WE regret to record the death of Lt. Col D C Davidson I M S, (Bo) very shortly after his recall from furlough, a victim to the undermanned state of the service

LIEUTENANT COLONEL J MCCONAGHEY, I M S, is granted the rank of Colonel while acting as Inspector General of Civil Hospitals, Bengal

LIEUTENANT COLONEL JOSEPH PARKER, I M S, Medical Store keeper, Bombay Command, is permitted to retire from the service from 18th May 1901

CAPTAIN W HENVEY, I M S, has been granted an extension of leave (m c) for six months

CAPTAIN C DUER, I M S, F R C S, has become Civil Surgeon of Insein Burma, *vice* Captain B J Singh, I M S

THE "Barclay" Medal of Royal Asiatic Society has been awarded to Mr E E. Green, the Entomologist to the Ceylon Government. This medal was founded in memory of the late Surgeon Major Barclay, I M S, who died of typhoid fever shortly after his tour in India with the Leprosy Commission. Surgeon Major Barclay was a distinguished mycologist

MAJOR W R EDWARDS, I M S, Civil Surgeon of Quetta, who has been medical officer on Lord Roberts' staff in South Africa, becomes a member of the Most Distinguished Order of St. Michael and St. George (C M G), and on his return to India is posted as Residency Surgeon, Kashmir

MAJOR W G THOROLD, I M S, from 15th April 1901, and Captain H B Luard, I M S, from 15th March 1901, are placed on the half pay list.

HONORARY LIEUTENANT J MORRISON, I S M D, has been promoted to be Senior Assistant-Surgeon with honorary rank of Captain for good service rendered in connection with the famine in Benar

LIEUTENANT COLONEL W P CARSON, I M S, acts as Deputy Sanitary Commissioner, S R D, Bombay, in addition to his own duties during the absence of Lieutenant-Colonel O H Channer, M B, D P H, I M S

DR E J SIMPSON is granted leave on medical certificate for nine months, and Captain W W Orr, I M S, acts as Superintendent, Central Jail, Lucknow

CAPTAIN G T BIRDWOOD, I M S, M B, on return to civil employ, is put on plague duty in Ballia District as Deputy Sanitary Commissioner.

CAPTAIN W W CLEMPISHA, I M S, is appointed to the officiating medical charge of 6th Bengal Cavalry

CAPTAIN R P WILSON, I M S, is appointed to the officiating medical charge of 9th Gurkha Rifles. Captain H Ainsworth, M B, to that of 8th Bengal Lancers, and Lieutenant H Innes, I M S, to that of the Bengal Sappers and Minors

MAJOR A R ALDRIDGE, R A M C, is appointed Sanitary Officer, Bengal Command, *vice* Major L. P. Mumby, R A M C, whose continued ill health has led to his being put on temporary half pay. Major Aldridge is an M B, Edinburgh, and a D P H, English Conjoint Board

CAPTAIN CHAYTOR WHITE, I M S, has passed the D P II examination at Cambridge, getting first place out of 30 candidates

THE article in our columns by Captain G Lamb, I M S, on Typhoid in Natives has been republished at length in the *Bombay Gazette*, May 7th, by order of Government

CAPTAIN A W T BUIST, I M S, recently on Plague duty, Gurdaspur, Punjab, is granted compound leave for 18 months

MAJOR R J MACNAMARA, I M S, Superintendent, Central Jail, Wootan, is granted compound leave for 18 months

CAPTAINS E J O'MEARA and J Stephenson, I M S, are granted six months' leave on medical certificate

IN the *Archiv für Schiffs- und Tropen Hygiene* (No 4, 1901,) articles are summarised which were published in our columns, *viz.* those by Captain C Barry, I M S, and Captain L R Rost I M S, on Beri beri, and by Dr A Powell on Keloid

MAJOR ANDREW BUCHANAN, I M S, M D, acts as Civil Surgeon, Nagpur, C P, in addition to his duties as Medical Officer, Central Jail, Mr Poynting, I C S, being in executive charge of the Jail

IN Army Circulars, India, dated 1st January 1901, revised rates of pay during leave out of India for the Indian Subordinate Medical Department are published. Senior Assistant-Surgeons get £125, and Assistant-Surgeons according to grade get from £120 per annum to £58

LIEUTENANT COLONEL H C BANERJI, I M S, having returned from temporary military duty, goes again to Purnea as Civil Surgeon

THE services of Captain H M Earle, I M S, are replaced at disposal of the Military Department. Captain Earle was in civil employ, Bengal, till last year when, owing to the China War, he was sent in temporary military duty

THE leave granted to Major F J Drury, M D, I M S, is for 20 days' privilege leave, and furlough for 15 months and 13 days

THE services of Captain E C MacLeod, I M S, being replaced at the disposal of the Assam Government, he is posted to Dhubri as Civil Surgeon

LIEUTENANT L P STEPHEN, I M S, took over medical charge of the Central Prison at Ahmedabad from Captain H M Mocre, I M S, on 24th April

THE services of Lieutenant-Colonel A F Dobson, I M S (Madras), are placed at the disposal of the Military Department

CAPTAIN A E BERRY, I M S, was appointed as Superintendent, Central Prison, Rampur, with effect from 18th March 1900

LIEUTENANT COLONEL G S A. RANKING, I M S, Secretary to the Board of Examiners, has been granted leave on medical certificate for six months

MAJOR H R WOOLBERT, M B, I M S, Agency Surgeon, is granted furlough for one year, and Major C Malcolm Moore, I M S, is posted as Residency Surgeon in Mewar

LIEUTENANT COLONEL A F DOBSON, M B, I M S, is promoted to be Colonel, *vice* Colonel T J McGann, I M S, F R C S E, retired

THE following medical officers, who for the past year have been on temporary military duty owing to the China War, now revert to civil employ —

Major J R Adie, I M S, M B, to Punjab, Lieutenant-Colonel S C Sarkies, I M S, Lieutenant-Colonel K C Sanjana, I M S, Major F C Perera, I M S, Captain E M Illington, I M S, to Madras, Lieutenant Colonel D Basu, I M S, and Lieutenant-Colonel H C Banerji, I M S, and Captain Clayton Lane, M D, I M S, to Bengal, Lieutenant Colonel C E Vaid, I M S, Major R J Marks, I M S, Major J. Garvie, M B, I M S, and Captain

G T Birdwood, M D., to the N-W P and Oudh, and Major K P Prasad, I M S, to Burma.

THE services of Captain P St. C More, M B, are placed temporarily at the disposal of the Punjab, and those of Captain H M Moore, I M S, are replaced at the disposal of Bombay

CAPTAIN CLAYTON IANE, M D, has joined the Medical College as Resident Surgeon

THE Parkes Memorial Prize has this year been awarded to Captain B A L HOWELL, R A M C, for his essay on Venereal Disease in the Army

CAPTAIN T JACKSON, I M S, acted temporarily as Professor of Materia Medica, Grant Medical College

THE leave granted to Major M A T Collio, M B, I M S, is sixteen days' privilege leave in combination with one year's furlough

LIEUTENANT COLONEL J McCLOUGHRY, I M S, F R C S, Civil Surgeon of Karachi, is granted three months' privilege leave (two months earned by Plague duty) and furlough for one year and 8 days with effect from 1st May 1901

MAJOR W H BURKE, M B, I M S, is granted 18 months' compound leave from 4th May 1901, and Major J C Hojoi, M B, I M S, act for him as Surgeon to the G T Hospital, Bombay

LIEUTENANT COLONEL D FRANK MULLIN, I M S, is posted as Chief Medical Officer in Rajputana

DR. R SCOT SKIRVING, Consulting Surgeon to the Australian Contingent in South Africa, has written an interesting book on "The Army in South Africa." We quote the following from a notice of the book in the *Australasian Medical Gazette*— "Regarding the Royal Army Medical Corps, while giving much credit to members of that body, he admits that any outside observer can see plenty of faults, both in the professional training of the men and in the routine of the department. He considers that the service is not composed of men of the highest type of professional intellect or education. Notwithstanding the great opportunities of the training at Netley, when they leave that training school and have either passed into active service or taken medical or surgical charge of military hospitals, their mode of life seems to be fatal for further professional study or self improvement.

"Their opportunities for study seem to be limited to venereal diseases, dysentery, enteric, and that curious A M D disease N Y D (not yet diagnosed). They have no opportunities for practising surgery, and in consequence are incapable of obtaining that priceless confidence which comes from constantly performing surgical operations.

"With all these drawbacks, the writer gives credit to the average army doctor for personal courage, conscientious performance of his duties in a kindly and sympathetic manner. He makes some very thoughtful suggestions regarding the correction of certain defects, and concludes by indicating that instead of sending out five eminent consulting surgeons at a cost each of £5,000 a year far better results would have accrued had the services of thirty-five good, all round hospital operators been utilised at the rate of £1,000 a year each, and a fair selection could have been made from hundreds of applicants.

"The author concludes as follows—It is mainly by one's mis takes that one learns. If this be so, the South African Campaign must have been a marvellous school for all ranks and all departments of the army. Let us hope that in the service, and out of it, the blood tears, and the treasure which we have so freely spent, have not been spent in vain."

ASSISTANT SURGEONS with rank of first Lieutenants in the U S Army receive a monthly pay of 133 dollars, increasing after each five years' service by 10 per cent. Free quarters are also given.

EACH military hospital in the U States has a well selected professional library, with all the representative current medical periodicals.

MAJOR G H FINK, I M S, is permitted to retire from 4th July 1901. He has been for years a civil surgeon in Assam, and has been on furlough (m c) since July 1900. He entered the service April 1884.

THE sudden retirement of Surgeon General J. Jameson, C B, from the post of Director General of the Army Medical Department at the War Office, coupled with his much commented upon exclusion from the recent honor list is a sign that all is not well at Whitehall. If it is true that Mr. Broderick proposes to hurl at the heads of a committee a ready made plan of Army Medical reform—which they are only to be asked to make suggestions upon—it is not impossible that in this we may see

the real cause of the sudden and premature resignation of the Director General.

CAPTAIN C THOMSON, I M S, Captain J S S Lumsden, I M S, on furlough, and Major J Garvie, I M S, become Civil Surgeons, 2nd class, owing to retirements of Lieutenant-Colonels Tuohy, Giles and Willcocks, I M S.

LIEUTENANT COLONEL H N V HARRINGTON, I M S, is posted to Ajmere as Civil Surgeon, Major R. Shore, I M S, to Ulwar, and Captain J N Macleod, I M S, to Quetta.

CAPTAIN E F SWINTON, I M S, is appointed Medical Store keeper, Bombay.

MAJOR D M DAVIDSON, I M S, has got three months' privilege leave, and Captain W D Hayward, I M S, acts for him as Civil Surgeon of Mooltan, in addition to his other duties.

MAJOR E A W HALL, I M S, is granted three months' privilege leave, and Captain E C MacLeod, I M S, is appointed to act as Civil Surgeon of Lakhimpur, Assam.

THERAPEUTIC NOTES

WE have received specimens of the following drugs from Messrs. Burroughs, Wellcome & Co.—(1) Tablets of Iron Citrate Compound, (2) of Beta Naphthol, (3) Hypodermic tablets of Apomorphine and Strychnine, (4) Tablets of Codeine and Nux Vomica, (5) Tablets of Benzolic Acid Co., and (6) of Ergotin. All of these are reliable preparations and brought out with the elegance now always associated with the preparations of this firm.

We also desire to call attention to an improved form of Eucalyptus oil "platypus brand." It is prepared in accordance with the 1898 edition of the B P and is free from irritants.

The SELTOGENE Co., of St. Helens, Lancashire, have brought out a preparation known as 'Sulphaques,' or nascent sulphur bath charges. We have tried these powders during the oppressive heat preceding the bursting of the monsoon rains, and found that the addition of them to a bath made it very pleasant, and we believe that they are of value in the relief of 'prickly heat.' They are also credited with keeping off mosquitoes, and it is a fact that a delicate smell of sulphur does cling to the skin for some time after the use of these powders in the bath.

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR *The Indian Medical Gazette*, c/o Messrs. Thacker, Spink & Co. Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs. Thacker, Spink & Co., Calcutta.

Annual Subscriptions to the *Indian Medical Gazette* Rs 12 including postage.

BOOKS, REPORTS, &c, RECEIVED

Military Hygiene By Captain Munson, U S A (Wm. Wood and Co. New York.)
Surgical Experiences in S Africa By Mr. Makins (Smith Elder and Co., 1901.)
A Text Book of Medicine. By Gibson (Young J. Pontland, 1901.)
The Extra Pharmacopoeia. 10th Ed. (H. K. Lewis, 1901.)
A Treatise on Materia Medica and Therapeutics By R. Ghosh (Hilton and Co., Calcutta, 1901.)
Bengal Charitable Dispensary Returns, 1901.
Calcutta Medical Institutions Report.
Drs. Mott and Durham's Report on Asylum Dysentery.
Retrospects and Prospects in Surgery By Reginald Harrison.
Lunatic Asylums Reports for Bengal and Madras.

COMMUNICATIONS RECEIVED FROM—

Major Drake Brockman, I M S, Simla. Dr. Stephens, Calcutta, Major E. Roberts, I M S, Simla. Capt. H. Smith, I M S, Jullunder, Major F. P. Maynard, I M S, Patna, Major J. Garvie Sitapur, Dr. R. Ghosh, Calcutta, Dr. Bose, Calcutta, Mr. P. J. Freyer, London, Dr. Max Simon, London, Major J. T. Culvert, I M S, Chittagong, Major D. M. Mohr, Calcutta, Mr. O. K. Naidu, Madras, Lt. Col. Matland I M S, Madras, Capt. F. H. Symonds I M S, Assam, Capt. C. Dykes, I M S, Manipur, Lt. Greig I M S, Swat Valley, Lt. Col. Bomford, I M S, Calcutta, Major Herbert, I M S, Bombay, Lt. Col. J. H. Pope, I M S, Madras, Dr. Nuttall, Cambridge, Major R. Ross, Liverpool.

Original Articles

A SUGGESTION FOR THE SURGICAL TREATMENT OF CHYLURIA AND OTHER FORMS OF FILARIAL* LYMPHATIC VARIX

BY PATRICK MANSON, M.D., C.M.G., F.R.S., ETC

SOME time ago I was consulted in a case of persistent chyluria. The disease was evidently slowly killing the patient. It had resisted a variety of drug treatments persevered with for years. As not infrequently happens in chyluria, the patient had varicose groin glands. It occurred to me that the tension in the lymphatic varix, the rupture of which into the urinary tract was the source of the chyluria might be relieved and the rupture healed could the varix by surgical means be induced to empty itself into a vein. I proposed to the patient to dissect up (of course with every aseptic precaution), one of the dilated lymphatics which were so prominent in his right groin, cut it across and telescope the cut end into some neighbouring and convenient vein which would have to be slit up for a short distance for this purpose. In this way I thought by short circuiting the path of the regurgitating chyle the chyluria might be cured and the patient's life saved.

The suggestion of an operation has apparently scared the patient, for I have not seen him again, but I think the idea a good one, and as there are few opportunities to put it into practice in this country, I venture through the columns of the *Indian Medical Gazette* to suggest that some of our Indian colleagues might act on it and at all events give it a trial.

The admirable papers on the surgical treatment of scrotal tumour by Major Charles and Lieut-Colonel Matland in recent numbers of the *Indian Medical Gazette* show that great advances have been made of late years in India in the surgery of one phase of filariasis. Their study induces me to think that one of these gentlemen, or some other of the many skilful operators now in India, might, by following the suggestion I have thrown out, cope equally successfully with other phases of the same infection. If found to succeed in cases similar to the one I have alluded to, the same principle might be applied to intra-abdominal lymphatic varices with chyluria, to ordinary filarial varicose groin glands, to lymph scrotum and, perhaps, to elephantiasis of the legs.

* We invite the attention of surgeons in the filarial districts to Dr. Manson's suggestion.—ED., *I M G*

A NOTE ON ASSENDELFT'S WORK ON STONE IN WETOSCHINO

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DR J. P. ZUM BUSCH, the London correspondent of the *Deutsche Medicinische Wochenschrift*, in the course of a correspondence which took place between him and me in the *British Medical Journal** regarding the mortality of supra-pubic lithotomy, drew special attention to the excellent results achieved by the Russian Surgeon Assendelft in performing that operation.

In his London letter to the *Deutsche Medicinische Wochenschrift* (22nd November 1900) which includes a belated summary of the discussion which took place at Ipswich last August on the best method of treating very large calculi, Dr. zum Busch expresses regret that both Feyer and I, in our endeavour to represent litholapaxy as the only saving method of dealing with stone in the bladder, should have made so unjust an attack on cutting operations generally, and on the *sectio alta* in particular. It is also a matter of regret to him that surgeons who have made the operation for stone in the bladder their speciality know nothing of the work of foreigners, and even when they perchance are acquainted with it, they value it so lightly. These are rather grave charges to bring against Feyer and myself in the columns of a widely read and influential German Medical Journal like the *Deutsche Medicinische Wochenschrift*, and I think they are undeserved. I would assure Dr. zum Busch that, although our knowledge of foreign surgical literature may possibly be somewhat restricted, we yield not even to him in our ready appreciation of good work done by surgeons of all nationalities. But the operation of supra-pubic lithotomy like all other operations in surgery must be judged on its merits, and by its results, and the nationality of the operating surgeon cannot, or at least should, not influence our judgment when the value or expediency of an operation is being discussed. In my letter to the *British Medical Journal* (November 3rd) which appeared some weeks before Dr. zum Busch's letter to the *Deutsche Medicinische Wochenschrift*, I recognised and did ample justice to Assendelft's brilliant work, and I therefore think that his charges against Feyer and myself are all the more uncalled for. But personal matters are of very trivial importance in comparison with the larger issues involved in appraising the relative values of litholapaxy and supra-pubic lithotomy, and as some readers of this Journal may not have had an opportunity of reading Assendelft's papers, a brief resumé of his work may not be unacceptable.

* *British Medical Journal*, October 13th, November 3rd and November 17th, 1900.

The first occasion on which Assendelft wrote on the subject of stone in the bladder was when he defended his thesis for the degree in Medicine of the University of Dorpat. It was printed by permission of the Medical Faculty of that University in May 1883 and appeared under the title of "Surgical Experiences of a Country Physician". This thesis was based on a report of all the surgical work done between the 10th June 1879 and 15th March 1883 in the village hospital of Wetoschino, an institution maintained and endowed by a philanthropic Russian gentleman named Von P. A. Paschow. The report embraced a summary of all the surgical cases treated at that hospital between the abovementioned dates, but here it will suffice if attention be directed to that portion of the thesis where in he discusses the treatment of stone in the bladder. During the period under review, 41 stone patients came under treatment. One boy was discharged without treatment, instruments being wanting at the time, and another boy died on the eighteenth day after admission into hospital, unoperated. These two cases were admitted into hospital prior to the 28th April 1880 when Assendelft assumed medical charge of the institution. The remaining 39 patients were treated by him, 37 of whom recovered and two died. A mortality of 5.13 per cent. In 33 cases lateral lithotomy was the operation selected; in five cases the "high" operation or *sectio alta* was performed, and in one case median lithotomy was carried out and resulted in a fistula. In 31 cases the ages of the patients varied from two to 15 years, the majority being boys between four and ten years old; three patients were between 16 and 20 years, and the remaining three were between 20 and 28 years. In discussing the subject of perineal lithotomy in his thesis, Assendelft states that he intends to practice the *sectio alta* more frequently in the future, and disclaims any intention on his part to upset the principles of the different perineal methods of lithotomy, as he considers that they will have to be practised, and that they will run concurrently with the "high" operation. He also remarks that Trendelenburg's method of procedure in the after treatment of supra pubic lithotomy insures a good result in the worst cases, while suturing of the bladder even under the most favourable circumstances had up to that time been followed by more failures than successes. Such is a brief summary of his thesis so far as it refers to stone in the bladder, and the only point of interest for us is that in it he foreshadowed his intention of adopting the *sectio alta* more frequently in the future than in the past.

The second occasion on which Assendelft addressed the profession on the subject of stone in the bladder was in 1887 when he contributed a very elaborate paper to the *Archiv für klinisch Chirurg* (Vol. 36) and followed it up by two short supplementary papers in the same volume. Those three papers embodied his experiences of 102 supra pubic lithotomies with only two deaths, a mortality of 1.9 per cent. One of these deaths (case 54) was not due to the operation. In his first paper which deals with 74 supra pubic lithotomies, he gives complete details of each case, and states the weights and composition of the calculi removed, the age of the patient and the number of days under treatment; he adds that his patients were in the most favourable period of life for the "high" operation, and that notwithstanding deep narcosis, the peritoneum came into view 21 times in the course of 74 operations, but happily with no untoward results. Grouping the 102 cases together, I find that the vast majority were boys, 78 being under 15 years of age, and in no case did the age exceed 29 years. The average weight of the calculi removed from boys below 15 years of age was 123 grains and was thus very considerable. In boys between two and five years old, the weight of the stone

varied from five to as many as 345 grains. The weight of the stone in patients between 20 and 25 years old varied from 150 to 450 grains, and the weight of the stone in patients between 25 and 29 years old varied from 80 to 1,719 grains. With regard to the hospital itself, in which these operations were carried out, Assendelft tells us that the wards are large, lofty and bright, and the air pure, and that the furniture and general equipment have little to be desired, the food is also good, and the care of the sick is undertaken by female nurses locally entertained and trained in the hospital, and he adds that they are most painstaking in the discharge of their duties. This is a pleasant picture of hospital management, and I can well fancy many of my readers working in some out of the way mofussil dispensary in the calculeous districts in India envying Assendelft's general surroundings. And still Dr. zum Busch in his first letter to the *British Medical Journal*, October 13th, 1900, writes, "Assendelft who in a Russian village, far removed from skilled assistance and without proper nurses, saw 630 cases of stone, did the supra pubic operation 460 times and in spite of unfavourable conditions lost only 15 patients."

But what will have most interest for readers in India is the after treatment of supra pubic lithotomy as carried out by Assendelft, and the number of days spent by his patients in hospital.

His method of procedure is the following. The bladder having been carefully searched for remaining fragments is washed out with a weak solution of carbolic acid, and then one large India-rubber drainage tube, or two smaller ones, are fixed in position in the bladder. Large iodoform dressings are then applied over the site of the supra pubic wound and are kept in position by bandages, and the patient is placed in bed with his face downwards, or in other words, he lies in the prone position, and thus free bladder drainage is insured. When the dressings become soaked with urine they are changed. He tells us that this method of insuring bladder drainage was at first merely provisional or experimental, but as the results following this position in bed were invariably favourable he subsequently treated all the patients whose cases he relates in his first elaborate paper, viz., 74 cases, by this method. With the exception of one grown up patient, who in the course of the first day succeeding the operation, found the prone position very irksome, all the other patients bore it well. Children whom it was difficult to persuade to lie on their faces during the first few hours after operation, and who in some cases had to be kept in that position by force, soon got accustomed to it, and later on, when placed on their backs, they cried out to be put once more in the prone position. During the first four or five days succeeding the operation, the iodoform dressings are removed and replaced from six to eight times during the 24 hours, and this is always done so as to disturb the wounds as little as possible. Assendelft writes "the constant changing of the dressings is of course very irksome to those concerned, but the force of habit soon gets the better of this inconvenience, and thus I have often changed the dressings for children without awakening them from their slumbers, and the patients rest so much more quietly in the intervals between the application of the dressings. I consider that this position is more bearable than when the patient has to lie on his side and the wound is left open. Less shifting of position and consequently more rest is obtainable in the prone position than by Trendelenburg's method of treating the wound openly." Regarding the time spent in hospital by each of the 72 patients whose cases are carefully recorded in his first elaborate paper, Assendelft states that the aggregate number of days spent in hospital prior to operation was 496, or an average of nearly a week for each patient. The aggregate number of days in hospital after operation until complete cicatrization of the supra pubic wound was 2,733, or an

* (*Chirurgische Erfahrungen eines Landarztes. Dissert. Dorpat, 1883*)

average of 37.95 days for each patient. The aggregate number of days between complete healing of the wound and discharge from hospital was 1,182, or an average of 16.41 days for each patient. So that each patient spent on an average 61.2 days in hospital, and in some cases the stay in hospital was very protracted. Assendelft found that the healing of the wound in supra-pubic lithotomy occupied on an average a week longer than in lateral lithotomy. In 17 out of 72 successful operations there was no fever during the course of recovery. In 14 cases it may be said that there was almost no fever. In 18 cases the fever was slight. In 12 cases there was high fever, and in 11 cases the recovery was protracted. Adding the cases of high fever and the protracted cases together, we find that 23 cases out of a total of 72 occasioned considerable anxiety. Discussing the different methods of treating stone in the bladder Assendelft, in this paper, remarks that Von Volkman at the meeting of Natural Philosophers which took place at Magdeburg had given it as his opinion that lithotomy and litholapaxy were methods of practice which no longer suited the present aseptic period in surgery, and that Petersen* in 1885 stated that the method of crushing calculi in the bladder would in the future, as a general rule, deserve only a place in the history of surgery! Those of us who have taken a part in the compilation of the special stone number of this journal can now well afford to smile at Petersen's baseless prophecy. The reasons advanced by Assendelft in his elaborate paper for preferring a cutting to a crushing operation in Russia are the following. Every capable surgeon should be able to cut while it must be expressly enunciated that in no other operation in surgery is the tactus eruditus of such importance as in crushing a calculus. In this paper he states that he has had no personal experience of lithotomy, but that it appears to him to admit of no doubt that cutting into the bladder and not crushing will win the day, since in every case cutting is always and everywhere practicable by means of the simplest instruments. In the volume which contains this important paper the pith of which I have just given, is another from the pen of the late Professor Josef Kovács (Budapest) containing views almost diametrically opposed to those of Assendelft's. Kovács' paper was read at the Congress of the German Surgical Society assembled in Berlin (April 1887) and in it he enthusiastically supported lithotomy at one sitting. In 248 operations undertaken for stone he did the *sectio alta* but twice. On both occasions the patients' ages were advanced, and crushing was contraindicated by reason of both patients suffering from numerous and very large calculi. One recovered in fourteen days, and the other, although he felt himself better for a considerable length of time, ultimately sank from kidney disease. In 58 cases of lithotomy at many sittings he lost seven patients, and in 110 lithotomies at one sitting, chiefly, he lost nine patients and he added that since the year 1884 he never lost a patient after lithotomy at a single sitting. Dr. zum Busch is no doubt well acquainted with this paper, and now that he has perused the special stone number of this Journal will readily recognise the similarity in the methods of dealing with stone in the bladder which characterised the practice of that distinguished Hungarian Surgeon and those which obtain in India all the present day.

The third and most recent occasion on which Assendelft addressed the profession on the subject of stone in the bladder was on the 29th April 1899, when in the surgical section of the 7th Congress of Russian doctors assembled at Kasan to perpetuate the memory of the great Progov, he read a paper embodying his twenty years' experience in treating cases of stone. This paper was translated into German and appears in the 60th volume of the *Archiv für Klinische Chirurgie*, page 669. Reviewing his experience he states that one out of every five or six patients treated in the village hospital

of Wotoschino suffered from stone, and during the twenty years under review he treated in all 630 patients for stone. Six hundred patients only were subjected to operation. This number included 460 supra-pubic lithotomies, 35 lateral lithotomies with three deaths, 38 median lithotomies with two deaths, 28 external urethrotomies for impacted urethral calculi with three deaths, 16 incisions of the meatus urethral for calculi near the orifice, 12 litholapaxies and a few other operations, such as dilatation of the female urethra with subsequent lithotomy. Dealing with the 600 operations as a whole, I find that 86.5 per cent of his patients were under 20 years of age, and that there were but 20 patients between 40 and 70 years old. It would have added considerably to the value of this paper read at the Congress if Assendelft had given the weights of the calculi removed from his patients in the more advanced periods of life but very probably for the sake of brevity—he refrained from doing so. As the great majority of the patients which he treated since the year 1887 were boys, it is reasonable to conclude that the average weight of their calculi was about the same as in the series of 102 cases already referred to. The number of litholapaxies is so small that they need scarcely engage our attention, except to remark that, although small in number, they may have been the forerunners of better things to come, and I think we may cherish the hope that a surgeon of Assendelft's great capabilities and skill as evinced by the signal success he has achieved in performing supra-pubic lithotomy may in the future feel disposed to give a more extended trial to Bigelow's method of lithotomy. One of the reasons which seems to have influenced him in limiting the number of his litholapaxies was the difficulties attending a cystoscopic examination of the bladder before the patients' discharge from hospital, and he tells us that they were not subjected to such an examination. He evidently fears recurrence of stone after litholapaxy, and doubtless such fears are well grounded if this operation is not efficiently and thoroughly carried out. But when one bears in mind that the vast majority of his patients were very young, and that their calculi could not have been complicated with pouching of the bladder and enlargement of the prostate, one would think that he was quite justified in dispensing with the cystoscope, and might safely have depended on the efficient use of the sound. The absence of a cystoscope, or the inability to use it without causing much inconvenience to the patient can scarcely be advanced as a valid argument against practising litholapaxy, when one bears in mind how very few cystoscopes there are, even at the present day, in India.

But the part of Assendelft's work which will have most interest for readers of this Journal is that which refers to the "high" operation, and in turning to it we find that, in all, he performed 460 supra-pubic lithotomies with fifteen deaths. Three deaths, however, were caused by extensive cancer of the bladder, and may therefore be deducted. The mortality of the remaining 457 was 12 or 2.6 per cent. Out of the total of 460, it was found necessary to do the operation a second time in three cases. Up to the year 1887, he had performed 102 supra-pubic lithotomies with two deaths, a mortality of only 1.9 per cent. In 358 supra-pubic lithotomies, performed between 1887 and the first quarter of 1899, the ages of the patients were under 20 years of age in 91.3 per cent of the cases treated, while 8.7 per cent of his patients were between 20 and 65 years. The oldest patient among the 358 cases treated was 65 years, and there were in all but eleven patients between 40 and 65 years. In 138 cases between two and five years old, there were four deaths, a mortality of 2.8 per cent, and in 95 cases between five and ten years there was but one death, a mortality of 1.05 per cent. Among 31 patients varying in age from 20 to 65 there were seven deaths, a mortality of 22.5 per cent, but as three deaths must be deducted on account of the com-

* (*Vergl. Berliner Klin. Wochenschrift*, No 31, 1885 s 501)

plication of cancer, the rate of mortality should stand at 12.9 per cent. Among Assendelft's 630 stone patients there were fourteen females, and it appears that in every case they submitted themselves to operation. With regard to the 30 patients on whom he did not operate, the following information is given. One died of uræmia a few hours after admission into hospital, and seven patients entered it in a hopeless condition. Two died three days after admission from uræmic convulsions. One anæmic boy suffering from chronic uræmic symptoms became insensible whilst 30 grammes of warm boric solution was being injected into the bladder preparatory to sounding, and all efforts to revive him failed. A *post mortem* examination disclosed a stone of considerable size fixed in the floor of the bladder, both kidneys were affected by pyelonephritis and the left ventricle of the heart was dilated. One boy died four days after admission, and a *post mortem* examination disclosed chronic suppurative peritonitis and pyelonephritis on both sides. A man 60 years of age died fourteen days after admission, and an enormous stone was found in his bladder; there was cystitis and pyelonephritis. Two men were discharged from hospital, as it was found that they were suffering from other diseases in addition to stone. Six patients declined operation altogether, and were discharged from hospital with their own consent. Thirteen patients who had all the symptoms of stone and in whom no stone was detected were discharged. Two patients in whom it was impossible to determine whether they had stone, inasmuch as they were suffering from cystitis, were also discharged from hospital. One would suppose that these two last mentioned patients might have been put under chloroform with a view of confirming the diagnosis before being sent away from the hospital. It will be observed that Assendelft, as a rule, kept his patients several days under observation before subjecting them to operation, and that he exercised a very judicious selection. Then it will also be remarked that the Russian patient fears the knife quite as much as our Indian patients do, for six of them, sooner than submit to a cutting operation, returned to their homes unrelieved, and no doubt lingered on in great suffering until death closed the scene. It will be seen that many of Assendelft's patients postponed all treatment until their condition was almost hopeless, and I think that it is but reasonable to conclude that this procrastination was caused by the knowledge that a cutting operation would be necessary for the relief of their sufferings. This, no doubt, was the reason why Assendelft met with so many large calculi in young boys. And it is the same in the present day in populous districts in India where lithotomy is extensively practised. Years ago, I wrote as follows: "A native of India will not, as a rule, undergo any grave surgical operation for the cure of disease until he has tried all other methods of treatment, and he will be even still more loth to submit his child to the terrors of the surgical knife unless he be fully persuaded that an operation is an unavoidable and absolute necessity. He will procrastinate and put off what he considers the evil day to the last hour. And hence it is that surgeons in India are continually meeting with cases of very large stones in young boys. But when the native of India comes to learn, as he is already slowly beginning to do, that in certain hospitals a stone can be disposed of without a cutting operation, he will then seek surgical aid for his child as soon as stone symptoms manifest themselves. I am strengthened in this belief by the fact that at the Indore Hospital the number of admissions into hospital on account of stone amongst boys has steadily increased since litholapaxy has become an established and a recognised operation at this institution. I am sanguine enough to hope that when the prejudices and opposition which have hitherto existed among surgeons in India against the operation of litholapaxy in boys shall have disappeared, and when this

method of treating stone in boys shall be more generally adopted than it is at present, that we shall then more rarely meet with cases of large stones in young male children. And should this operation become an established and widely recognised method of treating stone in boys, its adoption in this class of patient will mean an avoidance of an amount of pain and misery which can be only fully realised by those who are intimately acquainted with the daily lives of the Indian peasantry, cut off as they often are from frequent communication with large towns or cities where hospitals or dispensaries flourish. A glance at the table shows that many of the boys operated on at the Indore Hospital had suffered for four or five years from stone before they sought surgical relief, and I feel certain that many unfortunate Indian boys living in villages far removed from skilled surgical aid drag out a miserable existence for some years, and eventually perish with the stone in their bladders." I have taken the trouble to transcribe this passage in order to show how similar are the conditions in which the Russian patient suffering from stone lives in the present day throughout a vast portion of that great empire, with those of his Indian fellow-sufferers of some fifteen years ago. Even now in the N.W.P. and Oudh, the patient suffering from stone in the bladder has not, seemingly, derived the same benefit from the extension of litholapaxy as has fallen to the lot of his fellow sufferer in the Punjab. For I perceive that in the N.W.P. and Oudh during the year 1899, the number of lateral lithotomies almost equalled the litholapaxies, and that the number of supra pubic lithotomies amounted to as many as 64. In pleasing contrast with these figures I note that during the same year the number of litholapaxies in the Punjab was more than seven times as many as the lateral lithotomies, and that the number of supra pubic lithotomies was but six. I think we may claim the right to be put in possession of the details of these 64 supra pubic lithotomies performed in the N.W.P. during 1899, and the Inspector General of Civil Hospitals would confer a favour on those interested in the surgery of stone in the bladder by kindly inserting in the columns of this Journal a tabular statement giving the average weights of the calculi removed, the number of days spent in hospital after operation, the rate of mortality and the ages of the patients arranged in quinquennial periods. Such a table would be most valuable, and I appeal to him to supply this information. It would also be interesting to know under what conditions nine supra pubic lithotomies were performed in the Central India Agency during 1899-1900, and the Administrative Medical Officer will no doubt supply this information. Reverting to Assendelft's 30 cases in which he did not operate, I would remark that the case of the boy who died four days after admission into hospital and in whom a *post mortem* examination disclosed chronic suppurative peritonitis, resembled very closely one which occurred in my practice at Indore, and which I reported†. The boy's age was eight years, and the stone weighed 184 grains and consisted of oxalate of lime and uric acid, and the duration of disease was of three years. The operation presented no difficulties in its performance, but he died on the eighth day succeeding it, and a *post mortem* examination revealed a low form of pyæmic peritonitis, both pleural cavities contained a large quantity of pus, but the bladder and urethra seemed healthy and no particle of stone was found in the bladder, the left kidney was small and granular. In reporting this case I was at a loss to explain the cause of the *post mortem* appearances, and now I find Assendelft reporting very similar *post mortem* conditions in a case of stone in the bladder in which he had not operated. Had I kept my case under observation for a week or two instead of operating as I did on the day

* The Lancet, Dec., 1886

† Special Stone Number, Indian Medical Gazette

succeeding his admission into hospital, it is possible that in the interim he might have died unrelieved of his stone, and thus by the number of my litholapaxies in which a fatal result ensued would have been diminished by one.

Writing to me regarding my note* on 500 litholapaxies performed on boys at the Indore Hospital, Mr Cridge remarks "but there is one thing in it which surprises me and is new to me, viz., in the few fatal cases in boys you have had, diseased kidneys seem to be the chief factor. I cannot call to mind ever seeing organic disease of the kidneys in a young boy with stone." I should say that Mr Cridge's experience coincides with that of the great majority of surgeons in Great Britain and throughout Western Europe where boys suffering from stone in the bladder, as a rule, come under surgical treatment before their general health is undermined. But there cannot be a doubt that a considerable number of boys who succumb to operations for stone in the bladder in India labour under extensive organic disease of the kidneys, and it would also seem that in Russia, and possibly in many parts of China, the same holds good. Assendelft in concluding his most recent paper sums up his position in the following terms: "In western countries where specialism in medicine has so many ramifications, litholapaxy is considered the operation of election for adults, and also for children by only the most prominent specialists. It is only when litholapaxy appears to be contraindicated that cutting into the bladder is justifiable. Competent specialists, masters in both litholapaxy and lithotomy, have decided in favour of the bloodless method of litholapaxy as the operation of election. On the 28th March 1892, the assemblage of Russian medical men gathered together to perpetuate the memory of Pirogoff under the stimulating influence of Professor Subbotin and Dr Trojanoff decided, likewise, for litholapaxy as the operation of election. In western countries where abundant facilities for through travelling exist, it is easy to consult at the proper time a skilled litholapaxist, and therefore under such circumstances the removal of a stone from the bladder may seldom be an operation of immediate urgency and the patient may not be obliged to submit to a cutting operation. Nevertheless, it frequently happens that in Western Europe calculous patients seek competent aid too late, judging from the writings of distinguished western specialists such as Professor Dittel. But the condition of things is very different in Russia where surgeons are sparsely dotted over its immense territory. In University towns specialists may flourish, but not in the interior of an immense empire. The many claims on the services of the Russian village surgeons unfortunately postpone to the distant future the prospect, that from their midst, a sufficient number of competent specialists will be developed. The condition of the calculous patient in the country parts of Russia calls frequently for an immediate operation, and in my opinion no inconsiderable number of such patients even at the present day die without any operative assistance. According to the advice of some most experienced specialists cutting into the bladder and not litholapaxy is the operation of election for the general surgeon. I hold that the *sectio alta* is in a special manner the operation of election for children up to 15 years of age, and think that litholapaxy should only be undertaken in children by the most experienced specialists. The future alone will solve this question for us. Litholapaxy and supra pubic lithotomy are the operations which should be practised in the present day in cases of stone in the bladder. Looking at the present conditions of the interior of Russia on the one hand and remembering on the other hand, that the cases of stone which have been reported by Russian surgeons have always been those which occurred among youthful patients, we must be prepared to find that among us reports of cutting operations will in the meanwhile be more numerous than those of litholapaxy."

* *Indian Medical Gazette*, August, 1900

I have now, I think, given a fair summary of Assendelft's work so far as it refers to the operation of supra-pubic lithotomy, and readers of this Journal can form their own opinion as to its value. In the last twelve years Assendelft was assisted in nearly all his important operations by his colleague, Dr W. N. Winogrodskif, whose aid he cordially acknowledges. There can, I think, be no doubt that Assendelft has demonstrated that supra pubic lithotomy is in his hands a most successful operation, and it will be remarked that many of the calculi which he removed from very young children were of considerable size. Nevertheless I think that even in these cases an equally satisfactory result would have followed a perineal lithotomy as first carried out and described by Forbes Keith. I do not think that specialists in the surgery of the bladder have adequately recognised the great advantages and the excellence of Forbes Keith's method of perineal lithotomy as applied to very large calculi in young patients. But that they will do so later on I have not the slightest doubt. Recognising to the full the success which Assendelft has achieved in performing supra-pubic lithotomy, I think there cannot be a doubt that the great majority of his cases could have been dealt with equally well by a surgeon skilled in the use of the lithotrite. And when one dwells on the sixty long and dreary days spent in hospital by Assendelft's patients, with the irksome changing of dressings, and the lying in bed in the prone position for three or four weeks, and then compares all this trouble and suffering with the trifling inconvenience which, as a rule, follows a successful litholapaxy, one begins to realize how much the genius of Bigelow has done for the patient afflicted with stone in the bladder. How often, in India, do we not find at our evening visit to hospital a boy sitting up in bed quietly eating his food, or playing with his toys, or perhaps running about the wards, whom we saw the same morning before his calculus had been crushed writhing in all the pain and agony so characteristic of stone in these young patients? And then a short week afterwards we see the same boy leaving the hospital quite well and free from all urinary trouble. These are the gratifying results which neither supra pubic nor lateral lithotomy can achieve. Dr zum Busch writes, "Assendelft states that of his 457 cases, three have had recurrence, and it would be very interesting if the advocates of litholapaxy would publish their permanent results as the mortality of both methods being equal, the choice of one on the other must depend on the more or less frequent recurrence of stone which follows it." I need hardly point out the fallacy contained in this statement, for every one conversant with the history of the surgery of stone in the bladder knows perfectly well that the mortality which follows supra-pubic lithotomy and litholapaxy when these two methods are employed in patients who have passed the middle period of life, is not equal, and that it is in its application to men in advanced years, that the crushing method is so successful in comparison with lithotomy, be it supra pubic or perineal. In young patients, however, this contrast in results is not so marked, and Assendelft by his skill has shown that in this class of patient, supra pubic lithotomy and litholapaxy can be brought into line, so far as the rate of mortality is concerned, but not so far as rapidity of cure and the avoidance of great inconvenience and suffering during after treatment. And the fact that the great majority of Assendelft's supra pubic lithotomies were performed in young patients, and that 5 per cent of those who were admitted into his hospital at Wetzschino suffering from stone, were never placed on the operating table must not be overlooked. Never even in the most desperate cases have I declined to operate on a boy suffering from stone in the bladder, neither has Freyer done so. In India, as an almost invariable rule, we take the favourable and the unfavourable cases of

* *British Medical Journal*, October 13th, 1900.

stone as they come. Had I made a judicious selection among my young stone patients at Indore, my results as regards mortality would have been even better than they were, and I can honestly state that I never lost a case among the 239 litholapaxies which I performed on boys at Indore from the operation *per se*. My five fatal results were due to advanced kidney disease. I am at one with Dr. zum Busch in his desire that the advocates of litholapaxy would publish their permanent results, so that the vexed question of the great frequency which is said to follow litholapaxy may be finally settled. Unfortunately it is easier to do this in Europe than in India, for in India it is extremely difficult to follow up the medical history of our stone patients, and I am afraid that we must be content to look to specialists in Europe who practice among well-to-do patients, to supply us with the required data. Dr. zum Busch, in his second letter,* writes, "Birdwood—another contribution to the Special 'Stone Number' and an ardent litholapaxist himself, thinks that fragments are frequently left behind after litholapaxy in children, and quotes Sir Henry Thompson and Mr. Cadge as witnesses for the statement that recurrences are more frequent after the crushing operations." I must honestly confess that the impression left on my mind when I had finished reading Captain Birdwood's contribution to the Special Stone Number was that he was not a very ardent follower of Bigelow, for, in his contribution, he almost seemed to have held a brief for lithotomists throughout India, so many reasons and excuses did he advance to explain why they have been so slow to adopt litholapaxy. It struck me, however, as rather strange to find Dr. zum Busch describing Captain Birdwood's as an enthusiastic follower of Bigelow, and at the same time pressing him into his service in his campaign against litholapaxy. A mild form of enthusiasm is liable to be misinterpreted, and if Captain Birdwood now finds himself marching with the lithotomist he has only himself to blame. It may be true that he has good grounds for thinking that fragments are frequently left behind in the bladder after litholapaxy in children, and if it be so, the careless or inefficient surgeon should have the blame, and not the operation for in children fragments are easily detected by means of the finger placed in the rectum and by sounding, for such patients cannot be the subjects of enlarged prostate, and pouched and trabeculated bladders are excessively rare among these young patients.

On the other hand, in old men with pouched or trabeculated bladders due to enlargement of the prostate, it is excusable to leave fragments behind, and indeed in such cases, do what we may, we can never feel perfectly certain that we have cleared the bladder of all fragments. *Appropos* of these remarks, I would mention that in a letter received from my friend Mr. Cadge some little time ago, he wrote as follows: "Did I ever tell you of a conversation I once had with Sir J. Paget? We were walking on the beach at Hunstanton after a consultation. The talk fell about stone, and he stopped and said, 'If I had a stone in my bladder, I would rather take the greater risk and be cut than have it crushed.' I asked why?" and he said, "I see so many cases of recurrent stone and other urinary troubles following on lithotomy that I hesitate to recommend it." "He, I don't doubt, was alluding to the cases of enlarged prostate and atonic bladder class in elderly gentlemen." These, no doubt, are the cases in which recurrence of stone are so frequent, but then they are precisely the cases in which all cutting operations are frequently fatal, and I think that most patients, if the case was put fairly before them, would prefer to take the lesser risk of recurrence than the greater one of dying, notwithstanding Sir J. Paget's dictum just quoted. When Captain Birdwood wrote in the Special Stone Number, "Sir Henry Thompson says 16 per cent and Cadge says probably 20 per cent of lithotomy

cases have recurrence of stone," perhaps he overlooked the fact that this large proportion of recurrences took place at a time when the halting lithotomy of many sittings was being carried out in England. The only wonder is that in the evolutionary period of lithotomy, in the period no doubt referred to by Sir J. Paget, and which preceded Bigelow's great innovation of 1878, recurrences were not more numerous than they actually were. But nowadays, when the essential principle of Bigelow's operation has been fully grasped, and is being put into practice by competent specialists, I do not think recurrences after litholapaxy are as frequent as when Mr. Cadge delivered his memorable lectures at the College of Surgeons in 1886, lectures in which this distinguished surgeon so cordially recognised the work we surgeons in India were doing in endeavouring to extend the scope of Bigelow's method of lithotomy. One reads and hears so much about the recurrence of stone after litholapaxy that one is perhaps apt to overlook the fact that recurrence very frequently follows both supra pubic and perineal lithotomy. It stands to reason that eliminating from the problem the factor of "residual fragments," recurrence must follow supra pubic and perineal lithotomy quite as often as it does litholapaxy, for such recurrences are due to the descent of a fresh nucleus from the kidney. And therefore it is most unreasonable and illogical to expect that because we have cleared the bladder of a stone by any one of the three methods, litholapaxy, supra pubic lithotomy, or lateral lithotomy, that we can guarantee our patient from a recurrence of stone. So long as fresh nuclei are manufactured in the kidney as the result of general systemic malassimilation it is simply folly to shut our eyes to the dangers which threaten our patients, and there is plenty of evidence to show with what rapidity and constancy such nuclei are formed in the kidney in patients afflicted with a liability to the formation of stone. I may stop to give a case in point. In June 1880 Dr. Beaumont, my predecessor at Indore, crushed a stone in a boy, named Runchore, age six years. In May 1884, Dr. Cullen, then Civil Surgeon of Khairatabad, performed lateral lithotomy on this same boy and removed three calculi weighing in the aggregate, one ounce and 403 grains. On the 13th June 1885 this same boy, then aged eleven years, came into the Indore Hospital, and finding a small fistula remaining in the track of the perineal incision and feeling confident on sounding him that the bladder contained many calculi, I performed lateral lithotomy in the track of Dr. Cullen's old incision, and removed six stones weighing respectively 225, 135, 110, 100, 85, and 25 grains, and in addition 72 small stones which in the aggregate weighed 13 grains and which varied in size from No. 10 shot to that of a small pea. The boy recovered and left the hospital on the 10th August 1885. Reporting this case* I wrote "The future surgical history of this boy's life will be well worth watching, and his parents have now become so convinced of the danger which lies before him, that they have promised to bring him to the hospital for inspection two or three times every year." Notwithstanding this promise Runchore did not again put in an appearance at the Indore Hospital until the 3rd February, 1892, although he stated on admission that he had been again troubled with stone symptoms from the beginning of 1891. On sounding I detected at least three separate calculi which I crushed, and the debris weighed 380 grains and consisted of mixed urates and phosphates. He again left the hospital free from urinary trouble on the 19th February. During his recovery from the litholapaxy he complained of pain over the right renal region and suffered at times from nausea, and doubtless, one, if not both of his kidneys, were structurally diseased. He did not appear at the hospital again before my leaving India for good, but it is possible that he may have come under the care of one of my successors at Indore. Or what perhaps is more

* *British Medical Journal*, November 17th, 1900

* *Indian Medical Gazette*, September, 1885

likely, he passed away at his home a year or two after I had seen him for the last time, with all the symptoms of uremia, like some of Assendelft's patients on whom he very wisely declined to operate. I think we are justified in formulating the following conclusions regarding the recurrence of stone which takes place after operation.

In young patients, recurrence of stone takes place with equal frequency after lateral lithotomy, supra pubic lithotomy and litholapaxy when the last-mentioned operation is efficiently performed. In aged patients, the subjects of pouched and atonic bladders and enlarged prostates, recurrence of stone follows litholapaxy more frequently than it does supra pubic or perineal lithotomy, but the dangers attending the performance of these two last mentioned operations in aged patients, overshadows the drawbacks of recurrence after litholapaxy. I think these two propositions cannot be disputed, and that they sum up in a few words the question of recurrence of stone in patients at all ages. I need hardly point out that, although post prostatic phosphatic concretions can be readily removed by supra pubic lithotomy that they are always liable to recur so long as the enlargement of the prostate remains, and unless the offending lobe of the prostate can be removed in the course of the supra pubic lithotomy, little permanent relief is given to the patient, for the concretions in such cases are almost certain to recur. And even if the offending lobe can be removed in the course of a supra pubic lithotomy, the patient cannot be absolutely assured that there will be no recurrence, because later on, a fresh nucleus may drop into the bladder from the kidney. And therefore it is perhaps the wiser practice to crush such concretions when they recur, if it is possible to do so, than to perform supra pubic lithotomy. When such cases are complicated with cystitis and foul urine, then a perineal lithotomy would seem to be the best practice, although experience has taught us that in aged patients such a proceeding is always attended by considerable danger to life.

Dr zum Busch in his letters to the *British Medical Journal* already quoted would seem to have ignored the fact that the discussion which took place at Ipswich hinged on the best method of extracting from the bladder very large calculi not amenable to Bigelow's method of lithotripsy. In the discussion which followed I incidentally stated that out of 147 supra pubic lithotomies performed in India the mortality was as high as 42.17 per cent. I quoted these figures to show how high the mortality of supra pubic lithotomy is when performed for very large calculi in adult patients, and I feel quite certain that very few of these operations were performed on boys. Owing to the very inefficient way in which stone operations are catalogued in the reports of the hospitals and dispensaries throughout India, I am unable to prove that the great majority of these operations were performed on adult males and for very large calculi and complicated cases. My friend, Major J. A. Cunningham, Civil Surgeon of Delhi, in his excellent contribution to the Special Stone Number, has explained my position so well that there is no necessity to discuss this subject of the mortality of supra pubic lithotomy any farther. But I think it would have been better, if in the first instance, Dr zum Busch had made it plain that the vast majority of Assendelft's supra pubic lithotomies had been performed in young patients, for it is a surgical truism that all operations performed for the relief of stone in boys are, as a rule, followed by a very small rate of mortality.

And now I should like to make a few remarks on ethics in connexion with surgical operations undertaken for stone in the bladder, and in doing so I disclaim any intention or desire to wound the susceptibilities of the general surgeon who, through no fault of his own, has been deprived of opportunities of learning how to use a lithotrite. These observations will not apply to cases of boys suffering from stone in the bladder, because experience has taught us that in these young patients the rate of mortality following supra pubic lithotomy,

perineal lithotripsy and litholapaxy can be kept almost equal, although recovery follows much more quickly on the crushing than on the cutting methods. Granted that the rate of mortality of cutting operations in patients who have passed the middle period of life is, as a rule, greater than that which follows the crushing method—and I do not think that this proposition can be seriously challenged—what course should a general surgeon who has not learned how to use a lithotrite adopt, if called upon to treat a patient of fifty or sixty years of age suffering from stone in the bladder? The answer to this question will obviously depend both on the financial position of the patient, and on the place in which the general surgeon carries on his practice. For it is evident that if the general surgeon is living in the interior of a vast country like Russia and his patient is a poor man, the latter cannot afford the expense of a long railway journey to St. Petersburg or Moscow to consult a litholapaxist, even should the general surgeon advise such a course, and in these circumstances the patient must be prepared to take his chance and submit to a cutting operation or remain unrelieved from his sufferings. But the question assumes a very different aspect if a well-to-do patient of a like age, the subject of an uncomplicated calculus of moderate size, consults a general surgeon in a large surgical centre where skilled lithotritists are to be found. In such a case what advice should the general surgeon give his patient? Obviously he should tell the patient plainly that the risks attending the crushing of his stone would be less than if it were extracted by a cutting operation, and advise him to consult a surgeon skilled in the use of the lithotrite. Now this is a course which is not always adopted by the general surgeon living in large surgical centres where experts who have acquired a practical familiarity with the lithotrite are to be found. One of the most distinguished surgeons in London, and an operator of great excellence in most fields of surgery told me that whenever he meets with a case of stone in the bladder in private practice, it is his invariable custom to hand over the case to the care of a surgeon who has had a very large experience in crushing calculi. And doubtless this is the straightforward method of dealing with one's patients. There are others, however, who do not follow this straight course, and who, because they happen to be pretty expert with the scalpel, do not hesitate to consign to the dangerous ordeal of the knife old and middle aged men the subjects of small, medium size and uncomplicated calculi, and who then justify their practice by dwelling on the drawbacks and dangers of recurrences after litholapaxy. To such general surgeons I think the words used by Sir William Fergusson more than thirty years ago are peculiarly applicable: "A surgeon who keeps to lithotomy alone in the present day is hardly to be tolerated, he is behind the age, and his contempt or ignorance of lithotripsy renders his opinion of little value."

ON THE CHEMISTRY AND TOXICOLOGY OF NERIUM ODORUM, WITH A DESCRIPTION OF A NEWLY-SEPARATED ACTIVE PRINCIPLE

(THE COATES' MEMORIAL PRIZE ESSAY)

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NERIUM ODORUM, the sweet-scented oleander, known by the name of *Kanabi* in this part of India and by *Kaner* in Northern and

Western India, belongs to the Natural Order Apocynaceæ, the other important poisonous species belonging to this order being *Thevetia Nerifolia* (yellow oleander) and *Cerbera Odollam* *Holarrhena Antidysenterica* (Kurchi), the bark of which is considered by Indian practitioners as a specific in chronic dysentery, also belongs to this Natural Order. It grows wild almost all over India, but is much cultivated in the gardens for the sake of its flowers, white and red, considered invaluable as an offering to the deity in the Tantic form of Hindu worship. The flowers are also offered to Shiva and other Hindu gods and goddesses.

Description

It is an evergreen shrub yielding a milky juice, the plant is so common that a detailed description of its botanical characters is scarcely needed for its identification. The plant usually yields white or red flowers, about 1½ inches in diameter and sweet scented, but a yellow variety has also been described by Honorary Surgeon E. A. Morris, Tranquever, who found it growing near Srirangapatam in the Mysore Province. I have not seen any specimen of the yellow flowered plant in this part of India. A short description of the leaves and roots with sketches in natural colours is given below —

Leaves

Linear lanceolate, thickly coriaceous, acuminate, midrib stout, nerves numerous, slender, horizontal, petiole very short.

Root

Crooked, branched, ending in fine rootlets, externally pale yellowish grey, bark not very thick, soft, consisting of two layers, the outer one being pale yellowish grey, the inner layer is of a greenish yellow colour. The bark can be readily peeled off by the finger-nail exposing the white central woody portion. The bark possesses a slight bitter taste succeeded by a peculiar pricking sensation in the tongue attended with numbness which usually lasts for about half an hour. The sensation is similar to the one produced on the tongue by the ethereal extract obtained by Stass' process from the fruits of the yellow oleander. The Nerium root is distinguished from the yellow oleander root by the latter possessing a very thick, succulent root bark having no inner greenish yellow layer. The root-bark of the yellow oleander, when scraped, yields a thick milky white sticky fluid, absent in the Nerium root. When warmed with strong hydrochloric acid, the root-bark of the yellow oleander turns blue (Warden's test), but no such color is produced in the Nerium root bark when similarly treated.

Microscopical characters of the root

A transverse section of the root discloses woodcells and vessels, abundantly traversed by medullary rays which consisted of single rows of thick walled parenchymatous cells. Drops and patches of a yellow and orange-coloured thick exudation were found deposited here and there in the woody portion of the root. The outer pale yellowish grey layer of the root bark consisted of several layers of flattened cork cells containing drops of a colourless fluid, the inner greenish yellow layer consisted of parenchymatous tissue of narrow cells with patches of a yellowish colour and containing small dark coloured nodular masses. There were numerous openings of vessels in the inner layer of the bark. The cambium layer consisted of a few rows of greyish thin walled cells. Starch cells were found scattered both in the wood and bark of the root.

In the specimens I examined, I could not detect any crystals of oxalate of lime described as being present by Mr H. G. Greenish in the *Pharmaceutical Journal* of April 23, 1881, page 873. The characteristic microscopical appearance of a transverse section of the root consists in the presence of numerous medullary rays in the woody portion running from the centre to the circumference, in the presence of yellow and orange coloured drops of thick fluid in the wood and yellowish patches in the inner layer of the bark, as well as in the arrangement of the cork cells in the outer layer of the bark. These characters are well seen in the subjoined drawing sketched by an artist friend of mine from a specimen prepared and mounted by me.

Medicinal uses

Very few preparations of the Hindu Materia Medica contain Nerium as one of their ingredients. There is, I find on enquiry, only one preparation called the Mohabiseswara Rasa containing Nerium roots in small quantities and which is administered internally for the cure of leprosy. For external application, an oil prepared by boiling roots of Nerium Olorum and Plumbago Rosea, seeds of *Embelia Ribes* and cow's urine in Sesamum oil is recommended by Sanskrit writers as a cure for eczema and other skin diseases. The fresh juice of the young leaves is described as a useful application in ophthalmia attended with copious lachrymation. A paste made of Nerium roots with water is recommended by Chakradatta as a cure for chancreous ulceration on the penis.

We find it stated in the *Pharmacographia Indica* that the Muhomedan physicians describe it as a most powerful resolvent and attenuant, only to be used externally, internally it acts as a poison upon men and animals. A decoction of the root is recommended to reduce swellings, and an oil prepared from the root bark is recommended in skin diseases of a scaly nature and in leprosy.

Surgeon Major C. W. Calthorpe states that a poultice of the leaves fried in oil is applied to wounds to kill maggots.

The root of the white flowered Nerium has an Indian reputation as being one of the best antidotes for snake poison and there prevails a strong popular belief in the virtue of this root as a repellent of snakes. It is alleged that its presence in a room is sufficient to drive away snakes.

Toxicological Notes

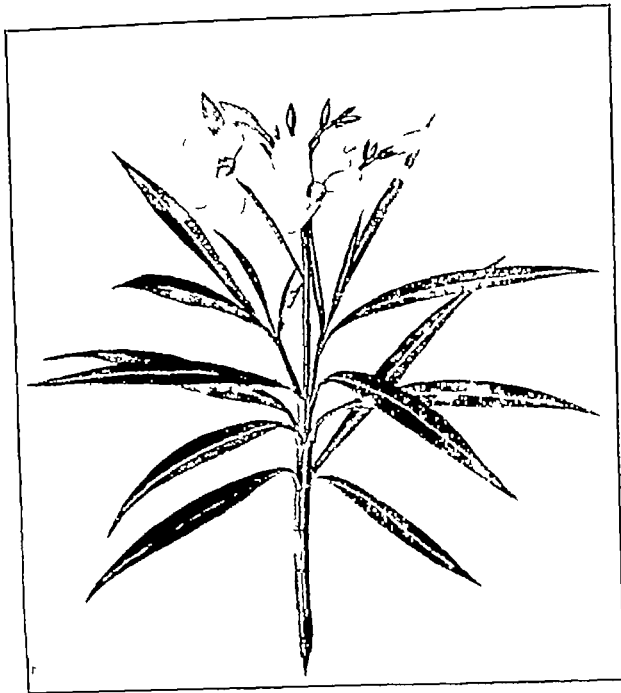
The plant has from very remote times been known in India to possess poisonous properties. It is one of the seven minor poisons of the Hindu Materia Medica, the other six being Opium, *Abrus Precatorius* seeds, *Datura*, *Gloriosa Superba* roots, milky juice of *Calotropis Gigantea* and *Euphorbia Nerifolia*. One of the Sanskrit names of the plant is *Aswamaraka* or Destroyer of horses and "it would seem from this that the poisonous roots were used for destroying horses."

All parts of the plant are poisonous. Dr Honigberger was of opinion that the wild hill plant was more poisonous than the cultivated variety, and he is supported in this opinion by M. Latour and Prof. E. Pelikan who found by careful analysis that the wild variety contained a larger quantity of the poisonous principle. In the hills and in Western and Southern India, the root is said to be commonly used by women for suicidal purposes. The use of the Nerium root for suicidal purposes is, however, not common in Bengal, the fruits of the yellow oleander are more largely used for this purpose. During the fifteen years ending 1888, fourteen cases of Nerium poisoning were referred to the Chemical Examiner, Bombay, and eleven to the Chemical Examiner, Madras, only two cases were dealt with by the Chemical Examiner, Bengal, during the same period.

In Bengal, the root of *Nerium Odorum* is used chiefly for the purpose of causing criminal abortion, it being applied locally and given internally for this purpose.

ON THE CHEMISTRY AND TOXICOLOGY OF *NERIUM ODORUM* WITH A DESCRIPTION
OF A NEWLY SEPARATED ACTIVE PRINCIPLE

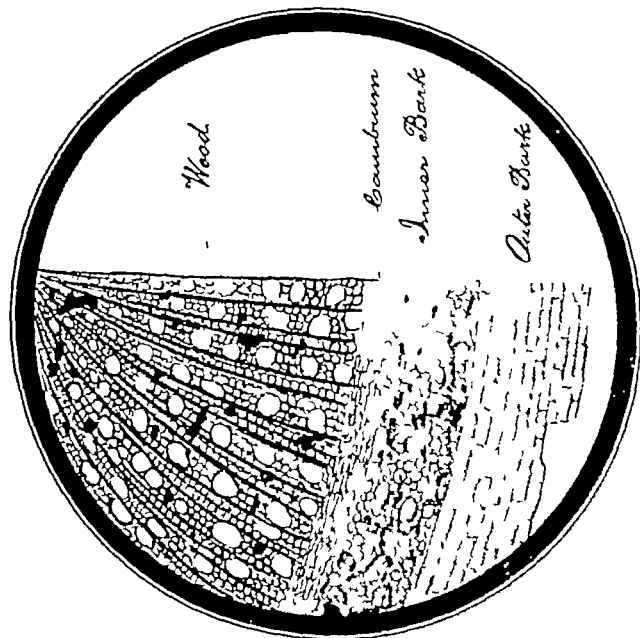
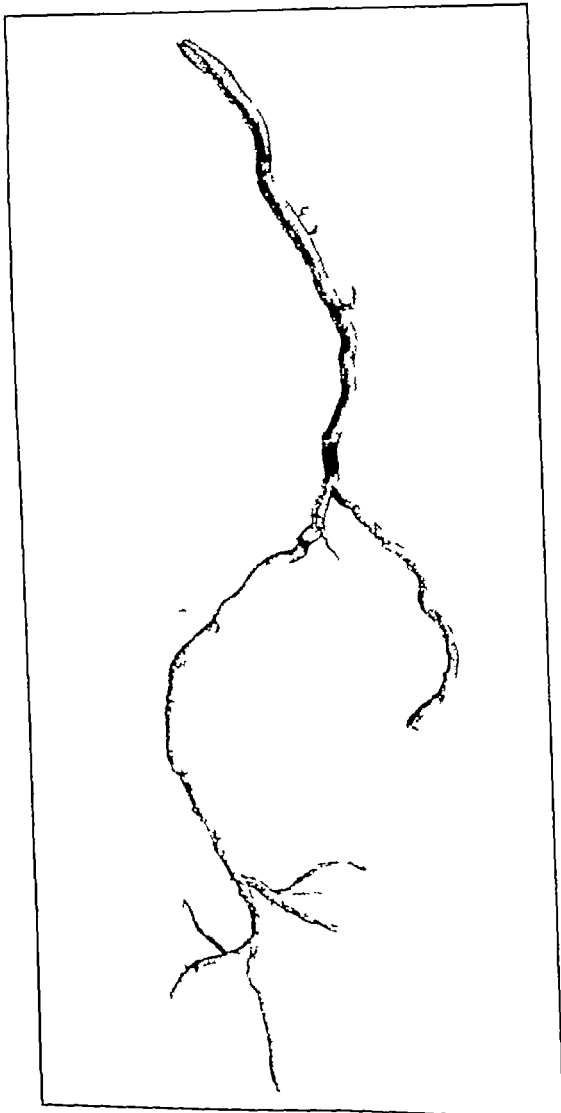
By ASST SURGEON RAI CHUNILAL ROSE BAHADOOR, M.B., F.C.S.



Nerium Odorum Leaves and White Flowers



Nerium Odorum Red Flowers



Nerium Transverse Section of the Root
(under the microscope)

Dr Watt mentions that the goat appears to be able to feed on the foliage of the plant with impunity, but it proves fatal to camels and other animals. The plant is said to be poisonous to insects also.

The employment of the root by ignorant persons for the cure of gonorrhoea and syphilis has been attended with fatal results.

The use of Nerium Odorum root for homicidal purposes is not common in Bengal. It may appear strange that a plant which possesses such marked toxic properties is not largely utilized to serve the purposes of the poisoner. The fact is that its toxic properties are not widely known, most people consider it and the yellow oleander to be quite harmless, and as such largely grow them in compounds and gardens.

CASES—(1) *Suicidal* The first recorded case of Nerium poisoning was reported in 1843 by Dr Greig of Sitapore. It occurred on the 9th March, 1840. A man, aged about 50, took some Nerium root mixed with mustard oil to destroy himself on account of a domestic quarrel. He was brought to the hospital about an hour and a half after the ingestion of the poison in an apparently insensible condition. The principal symptoms noticed in the case were—*Vomiting, preternaturally slow but regular pulse, and insensibility*.

The man was making favourable progress when, after making certain exertions, he suddenly died, probably from heart failure, about twenty-four hours after he had taken the poison. He never complained of any pain in the abdomen.

At the *post mortem* examination small patches of congestion with red points were discovered near both the pyloric and cardiac ends of the stomach posteriorly, there were also two slight abrasions on the mucous membrane of the stomach. The cavities of the heart, particularly the ventricles, were filled with black fluid blood. Other organs were found healthy.

(2) *Suicidal*—Dr Broughton, Civil Surgeon of Kolhapore in the Bombay Presidency, reported a case of Nerium poisoning, which was treated in the civil hospital at Kolhapore in August 1858. The history pointed to an attempt at suicide by swallowing a little more than an ounce of the expressed juice of Nerium (it is not stated whether the juice was expressed from the leaves or bark). He fell senseless within five minutes and was removed to the hospital. The following symptoms were noticed in the hospital—Face and eyes flushed, head hot and perspiring, breathing stertorous, "foaming at the mouth," violent spasmodic contractions of the muscles of the entire body, but more marked in the superior than in the inferior extremities and also more developed on the left than on the right side. During the intervals of the spasms, the patient lay flat upon his back. There were insensibility, quick thready pulse, involuntary passing of greenish watery stools, and collapse. After thirty-six hours reaction was established, spasms ceased, but insensibility remained as before. He regained his speech and senses after forty-eight hours. The man recovered.

(3) *Accidental*—In the *British and Foreign Medical and Chirurgical Review*, 1860, Maschka related the case of a boy who ate two handfuls (?) of Nerium oleander. The effects commenced in ten minutes, the child was uneasy and vomited. In six hours a sleepy condition came on, the face was pale, the skin cold, the pupils contracted, and the pulse slow and regular. After the sickness, the boy woke up, but again fell asleep, and this occurred frequently, coffee was given, which appeared to do good. The pulse was intermittent. On the following day, the child was still ill, with an intermittent pulse, frequent vomiting, feebleness, sleeplessness and dilatation of the pupil, there was no diarrhoea. (Blythe on Poisons, p. 435.)

(4) *Accidental*—Dr Dwarka Nath Mukerjee reported a case of Nerium poisoning, which was admitted to and

treated in the Calcutta Medical College Hospital on the 3rd August 1866. The history pointed to the patient's taking about 180 grains of the root of white flowered Nerium for the cure of chancre and syphilitic eruptions on the skin. The following symptoms were reported to have developed in the case—

Giddiness, general uneasy sensation, considerable restlessness, vomiting, tetanic convulsions, lockjaw, constant muscular twitchings all over the body, rigidity of the voluntary muscles. The patient stated he never lost consciousness, and that his mind was quite clear throughout. The man made a good recovery in 24 hours under treatment.

(5) *Accidental*—In a case of Nerium poisoning reported by Dr Kamikshya Nath Acharya in 1866, a boy was given powdered bark of the root of Nerium Odorum as a remedy for intermittent fever from which he was suffering. Lockjaw and tetanic convulsions were noticed in this case. The boy recovered under treatment.

(6) *Accidental*—Dr Cleghorn in 1868 reported two fatal cases of Nerium poisoning which occurred at Harriparah in the district of Murshidabad under the following circumstances—Three persons came to the house of a prostitute who gave them in milk the powdered root and bark of Nerium Odorum as a cure for gonorrhoea. Soon after they became sick, vomited, complained of pain in the abdomen, writhed about on the floor and became *sleepy*. The woman got frightened at the condition of these men and bolted from the house. The bodies of two of the men were afterwards recovered from her house, and Dr Cleghorn made the *post mortem* examination on them. The fate of the third person is not known.

In one case he found engorgement of venous sinuses of the brain, abundant puncta sanguinea, vessels on the exterior surface of the heart congested, right ventricle distended with dark fluid blood, congestion of vessels in the stomach at its posterior surface near the greater curvature with well defined patches of congestion near its pyloric and cardiac ends, mucous membrane of intestine throughout of a dark colour with very distinct large veins, a large patch of congestion in the duodenum, spots of congestion scattered in the jejunum and ileum, large patches of congestion in the sigmoid flexure, large vessels of the liver congested, the kidneys were intensely congested.

In the other case, the brain, the lungs, the intestines and the kidneys were reported to be healthy. There were two ounces of serum in the pericardial sac, both the ventricles of the heart were filled with fluid blood, the stomach bore well marked specks of stellate congestion, there were also spots of congestion on the anterior and posterior surfaces of the peritoneal coat of the stomach, covering its cardiac end.

(7) Dr Murray reported a case of Nerium poisoning in the September number of the *Indian Medical Gazette*, 1877. A native male, aged about 35, took a strained watery decoction of four ounces of the Nerium root. Soon after taking the poison, he was attacked with vomiting and cramps, and in two or three hours he became insensible. The following symptoms were noticed eight hours after the ingestion of the poison—Insensibility, skin cold and clammy, pulse weak and thready, muscles of the jaws stiff, eyes turned up, whites only visible, hands pretty open, but fingers rigid, thumbs turned inward, frequent convulsive spasms. The end of the case is not known as the friends of the patient removed him from the hospital while he was still in an insensible condition. The motive for the administration of the poison is not mentioned in Lyon's book on Medical Jurisprudence from which the above notes have been compiled.

(8) *Accidental*—In December 1897, a case of poisoning by Nerium root was successfully treated in the Calcutta Medical College Hospital. I am indebted to

Assistant Surgeon Satya Sriam Chakraborty, Registrar, Medical College Hospital, for supplying me with the notes of the case

A man, aged 35 years, by profession a *Palwan* (wrestler), took a quantity of Neriium bark for the relief of cough. On admission, he was found unconscious, with small extremely feeble and slow pulse, 30 per minute, respirations quick, occasional convulsions, putting out of the tongue, and inability to speak. Strychnine and ether were injected hypodermically. Pulse was better half an hour after the injection, 92 per minute, respirations 52 per minute. 30 grams of zinc sulphate were introduced through a nasal tube, as the stomach pump could not be introduced by the mouth owing to violent convulsions, after which there was nausea but no actual vomiting. Two hours after admission, the patient was found perspiring, getting spasms all over his body, laboured respirations (44 per minute), pulse irregular and small (about 90 per minute), heart sounds irregular. About five hours after admission, 11 ozs of urine were drawn off by a catheter. The urine was free from albumen. There was an irregular rise and fall in the pulse rate ranging between 35 and 80 per minute, and at times becoming intermittent, for several hours. About twelve hours after admission, the patient's condition grew worse, had difficulty of breathing, extremities cold, unconscious, getting spasms, pulse feeble and slow. Ether was hypodermically injected and hot bottles applied to the extremities. He continued in this condition for nearly six hours after which he recovered gradually, the pulse rose to 80, and the respirations came down to 20. His consciousness returned. He was discharged cured on the 11th day after admission.

(9) *Accidental*—In November 1898, two cases of Neriium poisoning were treated in the Calcutta Police Hospital under Major J. B. Gibbons, i.m.s., and were reported in the April number of the *Indian Medical Gazette*, 1899, by Assistant Surgeon Kali Mohan Sen who was in charge of the cases.

The cases were admitted into the hospital on the 24th November 1898, at about 10 A.M. The history pointed to each having taken a cupful of a strong decoction of the Neriium root at about 7 A.M. for the cure of pain in the loins from which both of them had been suffering.

(A) Mahomedan male, aged about 50. Vomited several times before and after coming to the hospital, vomited matter consisted of yellowish frothy fluid. At the time of admission he was quite conscious and able to speak and swallow, complained of no pain in the stomach, pulse small, soft, slow (about 60 per minute) but regular, respirations normal, eyes congested, pupils unequal, the right one being contracted.

Two hours after admission, drowsiness and twitchings of the muscles of the hands were noticed. An hour after, spasms were noticed, most marked in the upper extremities and face but slight in the legs. There was no lockjaw but dysphagia was a marked symptom, and the patient was unable to speak, although he appeared to understand when spoken to and frequently smiled vacantly. Respirations were hurried, and the pulse slow and small, about 50 per minute.

Four hours after admission, he began to get tonic convulsions of all the muscles of the body, especially of the upper extremities, no lockjaw. An hour after the whole body was found rigid, and there were lockjaw, twitchings of the fingers and bending of the neck towards the right, froth coming out from the mouth. The pulse was frequent (about 100 per minute), and the respirations hurried (about 70 per minute).

About 12 hours after admission, the upper extremities were found still rigid, but the lower extremities were flaccid, breathing was hurried and stertorous, and the pulse was frequent and small.

Rigidity of the muscles began to disappear gradually, but the general condition of the patient became worse. The pulse began to fail, the breathing continued stertorous and the conjunctival reflex was lost. The patient died about 26 hours after the ingestion of the poison.

Post mortem appearances—Dr Gibbons held a *post mortem* examination on the body about four hours after death and recorded the following conditions—

"Rigor mortis well marked, body still warm to the touch. Right pupil a little smaller than the left. Thumbs resting against fingers. Lungs, adherent behind and very congested with fluid blood. Heart, right side full with blood, left side nearly empty, spots of subendocardial haemorrhage on front wall and towards apex on both walls. Liver, spleen, and kidneys congested. Stomach contents, about 1½ oz of greenish yellow fluid and much mucus, no smell, stomach in folds with tops congested, mucous membrane congested, especially along the lesser curvature. Small intestine contents, yellow mucus, slight congestion of upper part of duodenum and a few scattered spots of congestion. Large intestine healthy, contained liquid faeces. Brain healthy. Trachea congested, and frothy liquid in the bronchi.

(B) Mahomedan male, about 28 years of age. The symptoms in this case were similar to those in the first case, excepting that they were apparently of a comparatively mild nature. There were vomiting, slow and feeble pulse, hurried respirations, twitchings of the muscles of the upper extremities, which however, developed about twelve hours after the ingestion of the poison as against five hours in the first case, unequal dilatation of the pupils, bending of the head towards the right, general tonic convulsions of the whole body, opisthotonos, lockjaw. A movement of the head from side to side was noticed, and there was a slight rise of temperature on the second day of poisoning. Under treatment he began to improve steadily, but remained in a debilitated condition for about three weeks, after which he was discharged from the hospital cured.

The treatment in both the cases consisted in giving emetics and alcoholic and diffusible stimulants, mustard plaster over the heart and hypodermic injections of sulphuric ether.

The viscera of the deceased and the vomited matter of both the persons were sent to the Chemical Examiner, Bengal for analysis. A *narcotico irritant* principle was detected both in the viscera and in the vomited matter which produced vomiting, weakness of the heart, general uneasiness and drowsiness in a cat, but not twitchings or convulsions. The poisonous principle could not be identified.

Remarks—From the study of the above mentioned cases and from the action of the poison on cats (*vide* Chemical Notes), the symptoms and the *post mortem appearances* one may expect to find in a case of Neriium poisoning, may be generalised as follows—

A Symptoms—Vomiting, general uneasiness and restlessness, frothy salivation, slow and feeble condition of the pulse, hurried respirations, sometimes stertorous, twitchings of the muscles of the extremities, specially marked in the upper ones and more developed on one side than on the other, rigidity of the voluntary muscles, tetanic spasms of the whole body, sometimes opisthotonos, frequently lockjaw, drowsiness passing into insensibility, collapse. Diarrhoea usually absent.

B Post mortem appearances—Patches of congestion in the stomach and upper portion of the small intestine, congestion of the liver, lungs and kidneys, engorgement of the general venous system, both sides of the heart full of blood.

FIVE CASES OF QUARTAN FEVER

BY A N BRAHMACHARI, M A, M B,

House Physician, Medical College Hospital, Calcutta

THE following cases of quartan fever were treated in the wards of the 1st Physician at the Medical College Hospital, Calcutta, between September 1900 and February 1901. The diagrams of the parasites observed in each case are appended.

Case No 1—Akawon, Chinaman, *æt*, thirty, was admitted on 23rd September 1900. Patient was employed in Jalpaiguri in the Rajshahye division in a tea garden during 1898 and 1899. While there, he was attacked with malarial fever for the first time and was treated with quinine. He came to Calcutta in May 1900 and suffered from fever from time to time, and as the attacks became more frequent he came into hospital.

Case No 2—Dhookmoola, Hindu, female, *æt*, sixteen, was admitted on 2nd October, 1900, suffering from malarial fever. Patient was employed in 1899 in Lilooah, a station three miles from Howrah, as a labourer in the railway construction works for about eight months. While there, she was attacked with intermittent fever. She came to Calcutta in June 1900, and had often suffered from malarial fever since then.

Case No 3—Lord, European, male, adult, was admitted on 13th October 1900. He had the first attack of malarial fever in Hyderabad (Deccan) in 1899, and was admitted for treatment into the Residency Hospital in June 1899 and remained there for about a fortnight. He was readmitted there for the same complaint in January 1900, and remained in hospital for about three weeks. He came to Calcutta from Hyderabad in February 1900. While in Calcutta he had frequent attacks of fever and eventually sought admission into hospital.

Case No 4—Abdul Huq, Mahomedan, male, *æt* sixteen, was admitted on 27th November, 1900, for the treatment of hemiplegia. Patient was in Midnapur for about eight days in 1899 and then in Calcutta, where he had the first attacks of intermittent fever after staying three days. He was treated with quinine. He then went to Burdwan and stayed there for about a fortnight. He then lived in a village called Golgram, about six miles from Burdwan, where he frequently suffered from malarial fever. He came to Calcutta for the treatment of hemiplegia in November 1900, and remaining outside for about a week was admitted into hospital.

Case No 5—D'Costa, Eurasian, male, *æt*, forty, was admitted on 19th January, 1901, complaining of fever and tremors in the right hand and in both the legs. Patient was in Hughli in 1894 for about a month. He had been suffering from intermittent fever since 1895, the attacks coming on between September and February. He had often been in Hughli, his last visit to the place being about two months previous to the present attack, which began on the 14th of February.

As the patient presented some very abnormal nervous symptoms, the notes of the case are given at full length.

On admission the patient was found suffering from tremors of both the legs and of the right hand in which they were most marked. The tremors began after the fit of ague on the 14th. They were somewhat continuous, diminishing during rest and increasing during action. There was nothing characteristic about the speech. The knee jerks were markedly increased and ankleclonus was distinctly present on both sides. There was exophthalmos in both the eyes. There was slight paresis of the right hand, the dynamometer showing 20 in the right and 30 in the left hand. On 21st

January, 1901, the tremors disappeared, but the knee jerks were still increased and exophthalmos and ankleclonus still present. On 23rd January, 1901, the exophthalmos had markedly diminished, and the tremors and ankleclonus had all disappeared. The knee jerks were still increased. On 25th January, 1901, the patient left hospital against advice. At the time of discharge exophthalmos was very slightly present, but the other nervous symptoms had all disappeared.

REMARKS—Quartan Fever is considered to be very rare in India. In his presidential address on the fevers of India in the Indian Medical Congress Dr Ciombic remarks that he had seen only one case in his whole experience in India.¹ Dr Maynard records one doubtful case in an outpatient in the Medical College Hospital, Calcutta.² Ross found only two patients to be suffering from quartan fever out of 112 cases of malarial fever examined by him in the Madras Infantry.³ The following table, mostly taken from Mannaberg's treatise on malarial fevers, shews the number of observations made in the other parts of the world by different observers—

Name of observer	Number of Quartans	Total number of cases of malaria fever observed	Seat of observation
Moullot	26	2338	Algiers
Koch	15	408	Italy
Fuchs	21	4211	Algiers
Durand	6	625	Tunis
Oser	5	616	Baltimore
Laveran	7	311	Algiers
Griesinger	3	414	Lübenzer
Thayer and Hewetson	5	542	Johns Hopkins Hospital

Double quartan fever is considered by many to be quite uncommon. Mannaberg quotes from authors who deny its existence. He observed only two cases in his own experience. Out of 77 cases of malarial fever, the notes of the blood examination of which have been kept by me and which were observed in the wards of the 1st Physician, Medical College Hospital, Calcutta, there were five cases of quartan fever, two of which were double quartans.

In all the five cases the quartan parasites were recognised in the blood, characterized by (a) their sharp contour and refractile nature (β), the presence of coarse pigment granules which were only slightly motile and more or less peripherally distributed except in the swollen extra corpuscular forms in which the pigment was irregularly distributed and in dancing motion, (γ) the small size of the full grown parasites, and especially of the extra corpuscular bodies as compared with the tertian ones, and (δ) the absence of expansion of any of the infected red

¹ Transactions of the Indian Medical Congress, 1895
² *Indian Medical Gazette*, November 1895
³ *Indian Medical Gazette*, 1896

blood corpuscles which were even sometimes smaller than normal and never lost their colour. The characteristic rosettes were seen in all except in case No 5, in whose blood, however, they were not looked for at the time when they generally begin to develop. The spores within the rosettes never exceeded 10 in number, though they were sometimes as few as 6 (*vide* diagrams). The arrangement of the spores in the segmenting forms was quite characteristic and differed from what is found in those of the tertian parasites.

The segmenting forms well merit the term "Maugette" or rosette forms so frequently applied to them. Occasionally, the rosettes shewed some peculiar evolution, while on the slide under the microscope, but then changes have not been shewn in the diagrams. While observing the parasites in one case under the microscope I noticed that the pigment granules after remaining clumped up in the centre of a rosette for twenty-four hours, commenced a most active movement (well described as a "boiling movement") which continued for ten days. The spores within the rosette became very indistinct after forty-eight hours, so that it was practically converted into a more or less hyaline spherical body with a clump of very actively moving pigment granules in the centre. After ten days the parasite disintegrated, leaving the pigment free. The slide containing the specimen of the blood was kept in the wards, the range of temperature being from 80°F to 85°F. The cover glass was painted with vaseline to prevent the blood drying up.

On one occasion a rosette was seen to rupture within an hour after the blood had been drawn, and in several other cases a similar phenomenon was observed at a later period, generally within twelve hours. The spores let free did not appear to attack any of the red corpuscles. In the process of rupture, the rosette got bigger, and the spores seemed to have an active motion.

The appearance of the parasites after a course of cinchona febrifuge or quinine has not been shewn in the diagrams. After a course of these drugs the parasites often looked fatty, and the peripheral distribution of the pigment granules in them was not so well marked.

In case No 4, rosettes were found on 19th January, 1901, though there was no fever on that date. This apyrexia was not due to treatment with quinine or cinchona febrifuge and remains unexplained. It shews that sometimes in the course of intermittent fever periods of apyrexia may occur spontaneously. In this case also, the parasites that were found in the blood on 1st March, 1901, were present in it for a long time after the patient had quinine and after the fever had ceased. These parasites may be considered to undergo further evolution in the blood of the mosquito. They were still present in the blood of the patient on the day

of his discharge from the hospital after he had been treated with quinine for more than a fortnight.

Some of the above cases presented some further points of clinical importance which may be mentioned here.

Case No 2 after a course of cinchona febrifuge had a period of apyrexia for some time and then began to suffer from a type of fever at first intermittent and then remittent. During these attacks the blood was examined on several occasions, but no hæmosporidia were found. This latter fever did not yield to quinine or cinchona febrifuge and ended fatally.

The *post-mortem* examination shewed no tubercle in the lungs or any other organ of the body. There was no evidence of typhoid fever. The mesenteric glands were enlarged, and a section shewed a large number of pigmented leucocytes. The liver was very fatty, and the spleen shewed an increase of fibrous tissue with a very large number of pigmented leucocytes. The *post-mortem* diagnosis of the case was "chronic malaria." The case shews how some of the intermittent fevers may become remittent, resist quinine and end fatally. It is possible that many of the remittent fevers of India began with such intermittent attacks, and such a termination of intermittent fever is difficult to explain by the parasite theory.

Case No 4 is also interesting. The temperature chart exhibited a double quartan fever with a simple quartan relapse. It supports the statement of many observers that quartan fever is the most obstinate of all the intermittent fevers. The case shews the beneficial effect of small doses of quinine in the treatment of quartan fever as has been suggested by Legrain.¹

Case No 5 is unique in the nervous symptoms manifested in it. Cases simulating disseminated sclerosis have been recorded as being due to the æstivo autumnal parasite,² and exophthalmos has been shown as being caused by the tertian parasite.³ No such symptoms have, as far as I am aware, been shewn to have resulted from a quartan parasite infection. The temperature chart was also interesting as, instead of steadily coming down the next day after ague, the temperature shewed only a morning fall and then a rise resembling the curve of malignant tertian fever as described by Machrafava and Bignami.⁴ The fits of ague came on, however, every fourth day. The blood shewed an unusually large number of quartan parasites, and the nervous symptoms may possibly be thus accounted for. The case may be described as one of malignant quartan.

A point of great interest in the case is that the patient suffered from intermittent fever

¹ Legrain's *Fievres Des Pays Chauds*

² *American Journal of Medical Sciences*, December, 1900

³ Knies' Eye in general diseases

⁴ Thayer's *Malarial Fevers*

FIVE CASES OF QUARTAN FEVER

By A N BRAHMACHARI, M A M B,

The drawings were made with the assistance of Abbe's camera lucida from specimens of fresh blood.
A Leitz microscope objective $\frac{1}{2}$ (Oil immersion) ocular two was used

(I) SIMPLE QUARTAN FEVER (AKOWON)



28 9 1900
8 A M



28 9 1900
4 P M

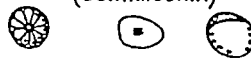


29 9 1900
8 A M

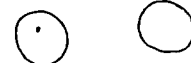
(II) SIMPLE QUARTAN FEVER (DUKHOONIA)



5 10 1900
2 P M

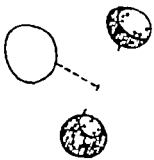


7 10 1900
5 P M

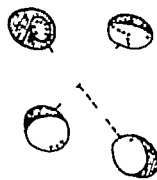


8 10 1900
8 A M

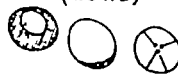
(III) DOUBLE QUARTAN FEVER (LORD)



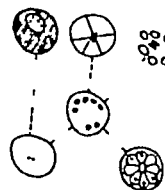
16 10 1900



17 10 1900
7 A M



17 10 1900
1 P M



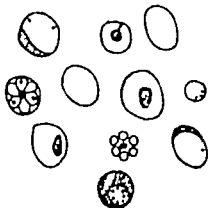
17 10 1900
4 P M



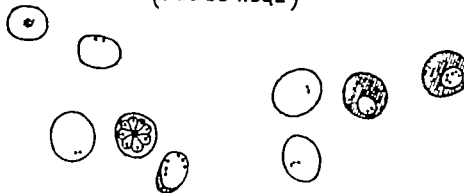
17 10 1900
7 30 P M

During ague
very few mature
parasites in the
peripheral circulation

(IV) DOUBLE QUARTAN FEVER (ABDUL HUQE)



13 12 1900
2 P M



2 2 1901
3 P M

3 2 1901
7 A M



1 3 1901
5 P M

(V) SIMPLE QUARTAN FEVER (D COSTA)



22 1 1901
1 P M



24 1 1901
8 A M



every year between the months of September and February—the time in fact during which all the other cases were admitted into the hospital. These months are apparently those during which this type of intermittent fever is most prevalent.

Since the above was written, another case has been admitted into the wards of the 1st Physician, the patient being a Chinaman and coming from Jalpaiguri.

THE RELATION OF THE ENTERO COCCUS TO THE ÆTIOLOGY OF TROPICAL DYSENTERY

By E D W GREIG, M B, B Sc,

LIEUTENANT, I M S

I PROPOSE in this paper firstly to review the work which has been done on this subject in relation to non-tropical dysentery, and secondly, to give an account of some preliminary observations which I have made regarding its connection with dysentery of the tropics.

Under the name of entero-coccus, Thiercelin, in 1899, described an organism found in normal stools in which it appears to lead a saprophytic existence. Recently two observers have been working on the relation of this organism to the ætiology of non-tropical dysentery. Simonin¹ determined its constant presence in a number of cases of dysentery which occurred in Paris. In his account he states "that the microscopic appearance of portions of the stools had a striking resemblance to pneumonic sputum as regards the morphological characters of the organism of that disease" (as will be described the entero-coccus occurs frequently in the form of diplococci, and having a distinct capsule). He separated the organism from the stools and found that it grew as minute transparent points on agar, in broth there was a slight turbidity, followed by a deposit. The vitality was found to be low on artificial media, dying out at the third passage. Inoculated in doses of 1 to 2 cc under the skin of mice, he did not, unlike Lewkowicz,² produce definite pathological lesions. He states that he found when the stools became feculent again the number of diplococci diminished in number and finally disappeared, although he noted their presence in some cases up to the 34th and 54th day of the disease. He considers that the organism stands midway between the pneumococcus and the streptococcus. A very good account of the organism is given by Lewkowicz, who considers it is the cause of non-tropical and possibly of tropical dysentery. His obser-

vations are confined to the former variety. He investigated three cases very fully. In two of them he got the entero-coccus in the stools in great abundance, in the third, which was complicated with meningitis, he obtained the organism in pure culture by lumbar puncture. He considers that it is related to the pneumococcus. He found in the stools that it is partly enclosed by phagocytes in the form of diplococci or short chains of four to eight. In the latter, the cocci are arranged in pairs and the opposing surfaces are broad and close to one another. On agar they grow as single cocci, pairs, short chains and sometimes as tetrads, a certain amount of pointing at the free ends resembling the pneumococci, is sometimes seen, most possess a broad delicate capsule. In broth they grow out in long chains, the capsule is well developed here and encloses single cocci, pairs of cocci or certain sections of the chains. In the animal organism the entero-coccus occurs as diplococci with a well marked capsule, sometimes it takes the form of streptococcus. It stains by Gram's method. Morphologically it differs from the pneumococcus in its more rounded form, breadth, power of staining of capsule and finally it forms longer chains in the broth. On artificial media it resembles the pneumococcus with, however, certain differences, the colonies being larger, more slimy, very transparent and tending to run together. The slimy appearance he thinks is caused by the capsule formation. In milk, after a time, coagulation takes place. It tends to die on artificial media. He finds the white mouse is the most susceptible animal (and for the purpose of easily and certainly determining the presence of the entero-coccus is very useful). He found that the fraction of a cc of a twenty-four hours serum broth culture killed in 1½ days *post-mortem* examination determined the presence of local inflammatory alterations with slimy thready exudate almost entirely composed of cocci, spleen was soft and somewhat swollen, no other organic alteration. Rabbits are also susceptible by subcutaneous and intraperitoneal injection. Injection of pure culture intravenously does not produce septicæmia. In conclusion, he states that the lesion which the organism produces is a local inflammatory one with slight toxic or septic action, and which he says agrees well with the clinical picture of dysentery.

My observations which I now record on the relation of this organism to the ætiology of tropical dysentery are entirely of a preliminary nature. I have investigated from this point of view a considerable number of stools of acute dysentery cases. I have been able to determine in these the presence of an organism identical, as regards morphological characters, with that above described by Lewkowicz.² The method I adopted was to make "smears" on cover slips

¹ Simonin Compt Rend Soc de Biologie, Tome LII, 5th April 1901

² Lewkowicz Centralblatt für Bakteriologie, Bd XXIX, 4th May 1901

from the exudate of an acute case. These I fixed in corrosive sublimate and stained. I found that dilute carbol fuchsin gave the best results. They were also stained by Gram's method.

The characters are seen well in the drawings from two of my preparations. In Fig I the organisms are intracellular, being in the protoplasm of a polynuclear white corpuscle.

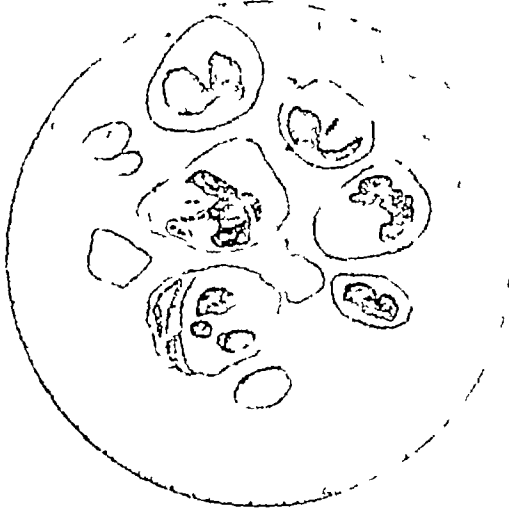


Fig. I $\times 1000$.

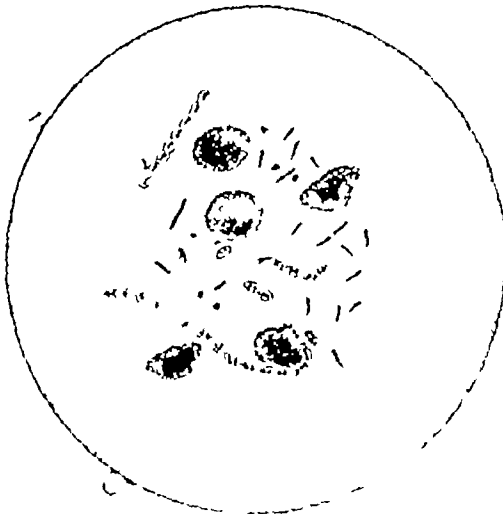


Fig. II $\times 1000$

They occur in pairs, the free ends being somewhat pointed, and having a distinct capsule round them being somewhat like pneumococcus in appearance. In Fig II, they are seen to be between the cells. They have grown out in the form of chains, and occurring, in the chains, as pairs, each individual pair being surrounded by a distinct capsule. Other bacillary forms are seen in the preparation. These two preparations I think give a very good idea of the organism as met with in dysenteric stools. It frequently occurs within the cells showing that this organism is capable of exciting phagocytic action and therefore of pathological significance. Some of the preparations I examined were composed almost entirely of a polynuclear exudation and

in many of the leucocytes, these organisms were to be found. I have made, in one or two cases, a series of observations whilst the cases were under treatment with salines and noted that the diplococci appeared to become less numerous, whilst other organisms, probably the normal organisms of intestine, increased.

I hope, if circumstances permit, to separate the organism and study its cultural characters. The constant occurrence of this organism in the stools of acute dysentery cases and also the production of phagocytosis lends support to the proposition that it is casually connected with acute dysentery of the tropics. I have examined a few cases of simple diarrhoea with a view to determining the presence of this organism in the stools, but, unlike the dysenteric exudate the results were negative. It is probable, however, that this organism may exist as a saprophyte in normal stools, as the pneumococcus is capable of doing in healthy sputum, and any cause lowering the local resistance of the intestine or increasing the virulence of the organism would determine the pathological condition called dysentery. In conclusion I have to thank my friend, Lieutenant J W Watson, I M S, for the drawings which he had made from my preparations.

NOTES ON FOURTEEN CASES OF CEREBRO-SPINAL FEVER

By HEM CHANDRA SEN, M.D.,

*Teacher of Materia Medica, Campbell Medical School,
Calcutta*

Of the 14 cases treated, seven were from the cooly depôt and the other seven were from the different parts of the town, so it appears that this disease is not confined to any particular locality.

The age of the patients ranged from 16 to 45 years.

Two were Mahomedans and the rest were Hindus.

All the patients were males.

All of them were labourers.

Many of the cases were very easy to diagnose, for the ordinary signs and symptoms as described in text-books were invariably present. In some cases other continued fevers simulated this disease, so much so that it was extremely difficult to give any opinion.

The first case of cerebro-spinal meningitis brought to the Campbell Hospital from the cooly depôt was diagnosed from the signs and symptoms as a case of cerebro-spinal variety of plague, when plague was raging in the town. The diagnosis had to be corrected after post-mortem examination.

Bacteriological examination of the effused lymph within the meninges shewed typical

forms of the *diplococcus intercellularis* of cerebro-spinal meningitis, whereas a plague germ takes the bipolar staining

In some other cases of continued fever the ordinary signs and symptoms of cerebro spinal meningitis were so marked that I thought they were cases of that nature, but the *post mortem* examination revealed no exudation of lymph, though the meningeal vessels were extremely congested. In some of these cases exudation of serous fluid was noticed.

On one occasion a case appeared to me to be that of cerebro spinal meningitis with apical pneumonia as a complication, but on *post mortem* examination only cerebral meningitis was noticed with a thick deposit of lymph over the cerebral pia arachnoid, but the spinal pia arachnoid showed no exudation of lymph whatever. The apical pneumonia was in the second stage. I have noticed many other cases of meningitis as complications of continued fever, which, of course, had nothing to do with genuine cerebro spinal meningitis. Another case of cerebro spinal meningitis with hypostatic pneumonia as a complication recovered.

It is extremely difficult to predict the final result in a case of cerebro spinal meningitis as well as in a case of plague.

Apparently hopeless cases of cerebro-spinal meningitis and of plague have been noticed to recover, whereas extremely favourable cases have ended fatally, cases progressing favourably have often been noticed to fall back in spite of the treatment which appeared to have brought on favourable termination.

Of the fourteen cases five recovered and nine ended fatally. Of the nine fatal cases one lasted for 36 days, one for ten days, one for four days, and the rest expired within 48 hours after admission. The man who expired after being treated in the Hospital for 36 days gradually became low and petechial and vesicular eruptions were noticed all over his body, even the cornea underwent partial sloughing and enormous bed sores developed over the bony prominences of the back in spite of every attempt to prevent them.

The five cases of recovery were treated in the following plan —

In the stage of *irritation of the meninges* manifested by myotatic irritability, rigidity of the muscles of the neck, back and abdominal parietes and convulsive spasm of the muscles of the extremities elicited by slight irritation or attempt to extend a flexed limb—*Kernig's sign*—ice was applied to the shaved head, bowels were kept free with mercurial purgatives, *morphia* was injected *hypodermically*, and the patients were kept under the influence of chloral hydrate and bromide of potassium. Small doses of calomel and soda bicarb were used invariably where the tongue appeared to be foul and symptoms of mental disorder predominated. In some cases liquor hydrag perchlorig with iodide of potassium was used instead of calomel especially from the commencement of the stage of effusion.

After mercurial purgation the patients were kept under the influence of nitric or nitromuriatic acid and nux-vomica to remove the tendency to inspissation of the salivary secretions and prevent the formation of sores and thick deposit of fur over the tongue.

In the stage of effusion marked by coma or muttering delirium, paresis of the muscles of the extremities, tremulousness of the fingers, etc., with a tendency to the formation of bed-sores and other trophic lesions, counter-irritation with *Unguentum Hydragyni Iodidi Rubri* over the nape of the neck and sometimes over the motor areas of the cerebral cortex and even on the temples was resorted to. Iodide of potassium with perchloride of mercury was invariably administered internally for helping the absorption of the effused lymph.

Bed sores were treated with stimulating local applications as *Tinctura Benzoin co*, *Rectified spirit with oxide of zinc*, and in some cases with resin ointment. Pressure on them was avoided by soft beds and circular pads of cotton. The peculiar thick whitish deposit of dried lachrymal secretions on the cornea was treated with saturated solution of boracic acid.

Tendency to collapse was met with free administration of stimulants whenever the extreme feebleness and compressibility of the pulse and laboured respiration indicated them. Alcohol in the shape of rum was the sheet anchor of the stimulant line of treatment.

The exhaustion of the nervous system was in some cases met with the administration in ounce doses of decoction of *S anacardium*, with milk and ghee until the nervous exhaustion disappeared. This decoction has been used in the second medical ward in many cases of nervous disorders manifested by paralysis, spasms, and tremulousness of muscles indicating exhaustion.

Chloride of gold in $\frac{1}{16}$ to $\frac{1}{8}$ th of a grain doses was used in many cases with or without the decoction of *S anacardium* to remove the tremors noticed in the muscles of the wrist and fingers of patients exhausted from continued fevers and to steady the functions of the brain after meningeal troubles.

In the stage of convalescence small doses of liquor strychninae and cinchona febrifuge were used. In some cases arsenic was administered with plenty of oleaginous food as milk and ghee.

It is very peculiar that in *post-mortem* examination the deposit of lymph is mostly found over the pons, cerebellum and medulla oblongata. In ordinary meningitis the deposit is more or less universal.

The choroid plexus which is only a part of the pia mater is invariably found covered with lymph. In these cases turbid fluid was noticed in the lateral ventricles.

It is remarkable that the deposition of lymph on the spinal pia-arachnoid is not uniform, often the pia-arachnoid of the cervical region is quite free from any deposit of lymph, the dorsal and lumbar regions invariably showed the deposit of lymph. Most of the effused

lymph was absorbed in the case who lived for thirty-six days in the hospital

I have never noticed any extravasation of blood in the internal organs in any cerebro-spinal meningitis case as described in Von Ziemssen's *Encyclopædia* or C Albutt's *System of Medicine*. Petechial and vesicular eruptions were noticed on the skin in one case who expired after being treated for thirty-six days.

In plague the blood does not coagulate and is often noticed to have extravasated on serous surfaces and in the vicinity of the affected glands, whereas in this disease no such condition of the blood has been noticed in any of my cases. Von Ziemssen's and Clifford Albutt's works describe cases of C S meningitis where blood remained liquid even after death, as in plague.

In Von Ziemssen's *Encyclopædia* it is stated that in cerebro spinal meningitis fluidity of blood and ecchymosis of internal organs were often noticed, as in other acute blood diseases.

In all the *post-mortem* examinations the exudation was fibrino-purulent, most marked over the pia-arachnoid covering the pons, cerebellum and medulla oblongata.

In some cases lymph was found along the larger fissures and in the sulci. In the majority of cases the exudation of lymph was not universal. The exudation was abundant on the posterior surface of the spinal pia-arachnoid. The cervical portion of the pia-arachnoid did not show any exudation in the majority of cases, though in the dorsal and lumbar regions the exudation was abundant.

The ventricles in some cases were dilated and contained turbid fluid or in the posterior corner pure pus. In some cases I have noticed serous fluid to exude from the sub-arachnoid space, this was noticed mostly where the deposit of lymph was scanty. I have never noticed any extravasation of blood as described by Prof Osler and others. In some cases a fluid resembling pus was found between the dura and pia mater.

In plague the blood is found to be liquid. Extravasations of blood on serous surfaces and in the vicinity of affected glands are invariably noticed.

In none of my cerebro spinal cases did I find anything like extravasation of blood except the petechial and purpuric spots on the skin of a case who died 36 days after admission.

Remarks—The disease is extremely obstinate. It is very difficult to imagine that lumbar puncture as advised by Quincke for the bacteriological examination of the fluid which comes out, should have any curative influence. It only at the best relieves temporarily. One can understand the utility of counter-irritation in meningeal inflammations. Those who have noticed the thick adherent lymph on the pia-arachnoid cannot conceive how aspiration of a few drops

of serous fluid can help the absorption of the effused lymph except by counter-irritation and temporary partial relief of pressure. Cutaneous counter-irritation with red iodide of mercury over the lumbar region, I think, may have the same beneficial influence as lumbar puncture. Though the microbes are confined to the cerebro-spinal axis, the toxins secreted by them pervade the whole system. No local treatment can remove the general disorders caused by toxins of the microbes. I have freely used the normal salt solution in every variety of cases of blood poisoning with satisfactory results either by the mouth or by the rectum or in grave cases by hypodermic method. There is no specific for this disease. A favourable case gets well of itself.

OCCURRENCE OF HERPES LABIALIS IN ACUTE PNEUMONIA

By T. H. SYMONS,

CAPTAIN, I. M. S.

WHEN on the frontier in December 1897 I had the misfortune to have an outbreak of pneumonia amongst the men in three companies of the P. I. Regiment which was stationed there.

There were many interesting points in connection with the cases that occurred, and not the least amongst them was the complete absence of that little symptom or rather complication which is supposed to be of such good import when present from a prognosis point of view—herpes labialis.

Altogether I had 25 cases of pneumonia, and that this symptom should have been conspicuous by its absence is, I think, rather peculiar and at the same time interesting. Osler says that he has usually found it present in from 12—40% of his cases, so if we take 25% as a fair average, I ought to have had at least 6—7 cases in which herpes should have been noticed. The question that naturally arises in one's mind is why should this symptom be so completely absent? It must be remembered that Osler's percentage was taken most probably in connection with white persons, whereas all mine occurred in the Native of India, so that the cause is probably something which is peculiar to the race and is, I think, as follows—

When a white person, European or American, gets an attack of pneumonia, he more frequently than not, gets some gastro-intestinal symptoms such as nausea, vomiting, and later on diarrhoea and jaundice, which tends to show that some inflammatory changes have been taking place in the mucus membrane of the stomach and intestine. Such being the case, it is perfectly feasible that the inflammatory process may spread up and down the alimentary canal, in the one case causing inflammatory changes about the mouth

and lips—stomatitis and herpes, and in the other case involving the anus and setting up a herpetic eruption which one occasionally, but rarely, I admit, is found there. From the above, I think it will be seen that herpes on the lips and anus when occurring in connection with pneumonia is the result of extension of inflammation and not nervous in origin. As to its value in prognosis when present it may be of favourable import, but, on the other hand, if absent, one should not look on the case as being unfavourable as to recovery, at any rate as far as the Native of India is concerned. Osler, to quote a good authority once more, gives the hospital death-rate of pneumonia as 20--40%. In my 25 cases I had four deaths, or 16%, and that, when the very inferior nursing and comforts, which the sick sepoy gets when ill be taken into account is, I think, most satisfactory.

Hence, although herpes was not present in any of the above cases, still the mortality was, I think it may be said, very low. It would be interesting to know what is the general opinion concerning the frequency of the presence of this little symptom in pneumonia cases amongst the Native of India and also intrinsic value giving a prognosis.

[Herpes labialis, we have noted in cases of pneumonia, but it is also common after purely malarial attacks, and is the only skin rash that we have noted in a series of some 60 cases of cerebro spinal fever, in which we have found it very common, but of no special prognostic significance—ED, I M G]

A Mission of Hospital Practice.

CASES IN S STEPHEN'S MISSION HOSPITAL, DELHI.

By MILDRED E STALEY M.B. (LOND)
AND O E HULL, M.B., B.Sc. (LOND),

Delhi, N India

Case I—Porro's operation ("Puerperal Hysterectomy") *Zagrani*, Hindu, aged thirty-five. Four children, but none for the last ten years, during which she has been bedridden from osteomalacia.

The patient when first seen had been in labour for five days, and as the *dais* had fled some three days before, she had been without food or attention of any kind. Owing to the extreme distention of the pelvis and general contraction, the finger could not reach the presenting part, and as the foetus was dead, and from the odour decomposing, it was at once decided to do Porro's operation even though it was midnight, and the operator was quite alone.

With the help of the trained (native) nurses of the hospital, all was ready within half an

hour of her admittance, and after a hypodermic injection of strychnine had been administered, the abdomen was opened by the usual incision in the mid-line, reaching down to within two inches of the pubis.

Immediately coil after coil of distended intestine was extruded, till several feet of it lay outside the patient, but as time was such an object, no attempt was made to deal with it, beyond covering it well over with several warm towels out of the sterilizer.

Next, a piece of strong rubber tubing (No 14 E catheter size) and about twenty inches long, was passed twice round the cervix as high up as possible, *i.e.*, immediately below the presenting head, tied once only, and clamped temporarily with a forceps.

The uterus was now packed well round with sponges and sterilized gauze so as to isolate it as far as possible, and an opening made in the fundus with a scalpel. This was at once enlarged downwards by cutting through the whole thickness of tissue with scissors the full length of the uterus when the putrid foetus was extracted by the feet and separated.

Owing to the elastic ligature there was little bleeding, and the after-history proved that the abdomen and intestines remained free from infection of the putrid contents of the uterus.

The uterus, with *secundine intact*, was now easily delivered outside the abdomen, the clamp was removed, and the rubber tubing pulled thoroughly taut and doubly tied, the uterus being then cut off with scissors well above it.

The abdomen was explored with sponges on long handled forceps, but proved to be quite dry, the stump was carefully trimmed, and the mucous membrane left in its centre thoroughly scraped away (as it tends to decompose if left), and last of all the intestines were returned coil by coil into the abdominal cavity.

It only remained to fix the stump into the lower angle of the wound, pedicle pins being inserted above the elastic ligature.

As the contents of the uterus had been so offensive, a Keith's glass drainage tube was inserted at the lower angle of the wound, to be withdrawn in a day or two. The abdominal wound was closed by ten silkworm gut stitches passing through the whole thickness of the parietes, no attempt was made to sew the parietal peritoneum to the base of the stump as recommended in the books, as it practically appears to make no difference, and wastes much precious time.

The upper part of the wound was powdered with Boro iodoform and dressed separately from the stump on which powdered boracic acid was freely dusted, and dry iodoform gauze and wool completed the whole dressing.

So feeble was the patient's condition on admission that only a few whiffs of chloroform

could be administered just at the beginning of the operation, while stimulants were given hypodermically throughout.

After-history—There never was any appreciable rise of temperature, and the stump separated on the eighth day.

A few hours afterwards the dressings were found soaked with blood, which, on opening up the wound, was found to be welling up from the deep stump cavity. On plugging this up tightly with strips of dry iodoform gauze, hæmorrhage ceased and did not recur.

For the first day or two some very foul fluid was extracted with the syringe from the Keith's tube, showing the need of drainage in such a case.

The after-treatment consisted in careful feeding with tiny quantities of Brand's Essence, and of milk alternately every hour (rectal alimentation was found impossible in this case) with stimulants administered both by the mouth and hypodermically, as needed.

The bowels opened naturally on the third day, and the patient is now (fourth week) perfectly convalescent.

Case II—Cæsarean Section Pyari, Mahomedan, *pardah-nashin*, aged thirty. Her last child was delivered by high forceps four years before, since which time she had been bedridden with osteomalacia, and there was extreme lordosis of the spine, while the deformity of the pelvis made it difficult to even reach the os.

As the F H S could be heard, and the anterior conjugate was under one and a half inches, Cæsarean Section was decided upon, and consent obtained.

The patient being anesthetized, and the abdomen opened by the median incision reaching to within three inches of the pubis, the uterus was exposed and isolated by sponges inserted into the abdomen. The assistant grasped the sides of the abdomen, pressing them against the uterus, which was then rapidly opened by the same method as described above. The placenta was found lying in front of the fundus and had to be torn through in order to reach the legs of the child, which was extracted alive without difficulty.

The placenta and membranes were rapidly removed manually and the uterus massaged with hot sponges while the stitches (of medium Chinese twist sterilized) were being inserted.

As the uterus contracted well, there was no need for applying the elastic ligature to the cervix, as is sometimes found useful where there is hæmorrhage, while the sutures are being inserted by Sanger's method.

It was intended to remove the ovaries at this stage, but the patient's condition became so bad that the operation had to be concluded as rapidly as possible.

With stimulants, and hot rectal injection, the patient rallied well from the operation, and made an uninterrupted recovery.

Case III—Anandie, Mahomedan *pardah nashin*, also one of Cæsarean Section, is mentioned to show the dangers of delay and previous interference where an abdominal operation is clearly indicated.

This patient had only been in labour three days, osteomalacia was far advanced, and there was extreme distortion and lateral contraction of the pelvic cavity, though it was possible to make out the presenting head with the writer's small hand in the vagina.

The friends at first absolutely refused to hear of Cæsarean Section, and as the poor woman was begging to be put out of her misery, craniotomy was quickly performed. But even then it was found to be impossible to extract the head or deliver the child, and on seeing this, the family at last consented to the abdominal method—fearing the disgrace of the patient dying undelivered. Thus it was not till after three precious hours had been wasted, that Cæsarean Section was performed by the usual method, as above described. In this case, as the child was dead, and the patient exhausted by all she had gone through, the rubber ligature was applied to the cervix before opening the uterus, and very little blood was thus lost.

The patient never rallied properly after the operation, and in spite of transfusion, stimulants, &c, sank quietly after some twenty hours, yet another victim to the ignorance and prejudice of (so-called) educated men of this country.

REMARKS

1. Delay in either preparing for or performing Cæsarean Section and hysterectomy is to be avoided. Hence the need of keeping in perfect readiness every thing needed for these serious operations, e.g., *sterilizers* are a necessity, so that all towels, dressing, &c, can be ready in half an hour if need be—even in the middle of the night. One might mention too that sponges of sterilized absorbent wool sewn up in bazaar gauze sterilized, should be kept in readiness, while even the thorough cleansing out of the vagina can be left till after the operation is over.

2. The parietal incision for Porro's operation needs to be carried an inch lower than for Cæsarean Section, i.e., to within two inches of the pubis, so as to fix the stumps more easily afterwards. One-third of it should be above the umbilicus.

3. The cut in the uterine walls should not be carried too low down, lest the uterine arteries be endangered. The anterior reflection of the peritoneum off the uterus is a good guide.

It is unnecessary to waste time in trying to determine the seat of the placenta in order to avoid incising it, as in Case II, where it is lying

right in the line of incision, it can be plunged through and removed quickly after the extraction of the foetus with the hand

4 It seems also unnecessary to wait patiently for the placenta to detach itself spontaneously, as books recommend, the uterus contracts best, and the bleeding only ceases after it is empty, and delay is always dangerous. In Porro's, it need not be removed at all

5 There is no need to apply the rubber ligature round the cervix, in a Cæsarean Section case, except when severe hæmorrhage occurs from the uterine wound when it can (if handy) be applied in three or four seconds

6 The rubber ligature for the stump in Porro's operation is in my experience far a more satisfactory than a Kœbeile's Serre-nœud, or any other. In five cases, I have used it four times, and they have invariably been satisfactory, also one has not the worry of taking care of the long metal handle, which often prevents one from turning the poor deformed patient on her sides, a great relief to those with lordosis, or congested lungs

7 In Porro's operation it is quite unnecessary to spend precious time in carefully sewing the parietal peritoneum to that of the stump below the ligature, as I myself used to think important, now I merely see that the stump is well raised and fixed up in the lower angle of the wound, while the peritoneum is tucked down below the rubber ligature in good contact with the peritoneal surface of the stump, to which it rapidly adheres

8 There is also no need to deliver the uterus outside the abdominal walls in Cæsarean Section, even after delivery of the foetus, as often done, sutures, &c, can be well applied while the uterus is still in the abdomen,—and provided a fairly intelligent assistant will keep the parietes pressed against the uterus, no evil results, and there is less danger of infecting and bruising its walls

9 The method of suture mentioned above is as follows—

First, the peritoneal covering is detached for a slight distance (with the handle of the scalpel) along the margins of the uterine wound

Next, deep sutures of silk are inserted through the muscular and serous (but not mucous) layers of the uterine wall, and left loose till the superficial ones have been put in. These are passed twice through the serous membrane on each side, so as to bring a good surface of it together, and are then tied, the deep sutures being last of all drawn tight and tied. This effectually closes the wound from the abdominal side, if all is trusted to deep sutures through the muscular wall, the

retraction of the uterus will soon leave these loose and give a weak union as a result with perhaps escape of discharges into the peritoneal cavity

10 Regarding after treatment, I can only say that these puerperal cases seem able (from our experience) to digest food by the mouth from the very beginning, and consequently food is given in small but increasing quantities every hour that way, as well as per rectum. But too often there is no chance of preparing the patient beforehand, and so rectal feeding is found to be difficult

The recovery of the two cases mentioned above was, without doubt, due to the ceaseless watchfulness and devotion of the (Native) trained nurses of this hospital, it seems hardly fair to perform such operations unless one can be sure of properly caring for the patient afterwards

SOME CASES OF MALIGNANT PUSTULE

By A NEVE, M.D.,

Kashmir Mission Hospital

ANTHRAX is endemic in Kashmir, and every year two or three cases of malignant pustule are seen at the Mission Hospital.

Wool is exported, and Dr Bell, of Bradford, informed me that Kashmir wool is a frequent cause of 'Woolsorter's disease,' especially in its pneumonic form

The cases briefly narrated below occurred during last winter, and are of interest, on account of the history which is clearer and more connected than one is usually able to obtain in this country

In the village of Kanda, 8 miles from Srinagar, last autumn (1900) there was much disease among animals, fowls as well as sheep, goats and cattle died. A woman was attacked by malignant œdema of the chest and neck and died within 48 hours. Her brother-in-law, Hasan, came to hospital on January 8th with a history of eight days' illness, fever and pain, and showed a typical pustule over the lower ribs on his right side. *Appearance*—A patch of œdema with redness extending for two inches around an angry button shaped pustule, resembling an inflamed vaccination pustule about the 8th day

General condition—Not bad, temperature only 99.4

Treatment—I excised the pustule freely, and united the edges of the wound

Progress—The temperature dropped to normal, and remained so. On the 15th he complained of cough with pain in his side, but this passed off in two days, the wound healed by first intention, and he left cured on the 19th January. Four days later his brother Nura came in with a similar pustule on his right shoulder, and with œdema and erythema extending over his face and neck. The pustule was treated by actual cautery. On the fifth day of disease the temperature rose to 104° but five days later sank to normal and continued so. The erythema spread gradually over the body, but became

fainter and died away. He suffered for some days from cough; and spat up some blood streaked sputum, this was examined microscopically, and cocci and streptococci were found. He made a good recovery and left hospital on the 15th day.

These two cases threw light on that of Sadiq, of that same village who came to us a fortnight earlier, with an abscess in his right axilla, and some inflamed scratches, with small pustules over the left infra-axillary region. He was suffering from severe constitutional symptoms, and gave a history of three to four days' illness. The abscess was opened aseptically, and healed in a few days.

From an adjoining village a little girl was brought with a malignant pustule on the left eyelid, and much surrounding oedema. It was cauterised, and healed in the course of a fortnight. In this case the appearance was somewhat similar to a chancre.

Two or three other cases with no special features were seen up to the middle of March, since when no others have been heard of.

When we take into consideration the frequency of anthrax in animals, and the way in which with utter recklessness of cleanliness the Kashmiris and their cattle herd together during the winter months, the only wonder is that the villagers do not suffer more from malignant pustule. Another point of interest is the absence of any definite pneumonic form of the disease. It would appear as if the wool when packed and shipped became more infectious and virulent than it is in this country.*

ON THE USE OF LEAD PLATE IN SIMPLE ULCER, AND OF SANDBAG IN BUBO

By J. L. MARJORIBANKS,

CAPTAIN, I M S,

Erumpura Irregular Force

ONE object of this paper is to bring more prominently into notice an extremely useful method of treatment of that bugbear of the regimental surgeon, simple ulcer due to neglected shoe-bite or to kicks from horses. To those who are already familiar with the method of treatment, said to be an old one in this country, the introduction of the subject may be justified by the fact that there are many regimental surgeons who are not. Again, the apparent triviality of the disease whose treatment

is mentioned, in comparison with many grave conditions discussed in these columns, is counterbalanced by the fact that in the Native Army, with men so insensitive to pain as the sepoys, who will go on letting ulcers that began as abrasions eat into them day after day without thinking of reporting sick till they go dead lame, ulcer from shoebite is responsible for a proportion of the percentage constantly sick in healthy regiments, that makes its rapid cure, as well as its prevention, a matter of no small importance.

The writer has treated all simple ulcers, and many foul ones, as well as all shoebites involving loss of the true skin, during the past three years with small pieces of lead plate about 1 mm in thickness. A stock of pieces is kept most of them an inch or two in diameter. They are pliable and can be easily adapted to the contour of a limb. An old stop butt is a convenient source from which to obtain the lead, which is easily hammered out, and can be cut with shop scissors.

The plate is simply bandaged on, no other application being made. An immediate change, noticeable in 24 hours after the commencement of the treatment, is that the surface of the ulcer has become absolutely flat, a necessary preliminary to the next change noticeable, viz., that the blue skin from the edges begins to creep over the ulcer with a rapidity which is not seen in any other method of treatment. In a healthy sepoy, one with no scorbutic or other taint, the rate at which an ulcer that had been slowly healing under ointment will "skin over" when the lead plate is applied instead, will astonish anyone who has not seen the treatment tried before. Indeed, failure to obtain a good result may often be taken as a warning that there is some constitutional cause for delay in healing which may have to be combated with limejuice, iron or mercury.

Foul ulcers treated thus often very rapidly become clean owing, apparently, to the immediate flattening of the surface that takes place, and that renders the use of sulphate of copper quite needless in exuberant ulcers. In the large raw surface left on the forehead in cases of rhinoplasty the writer has found the use of a lead plate expedite the very tedious process of cicatrization, and it does not interfere with efforts at skin grafting. The pressure exercised by the lead appears to be the main factor in the cure, though a certain amount of astringent and antiseptic action may be caused by salts formed from the lead.

Another example of the utility of pressure in expediting a tedious process is afforded by the use of the sandbag in causing the absorption of buboes. A bubo in the groin that has not broken down may sometimes be successfully treated by bandaging on with a spica, a large sandbag, as heavy, in fact, as the patient can bear. Beneath the bag a piece of lint smeared with mercurial ointment may be applied. In cases of buboes wholly or partially liquefied the use of this method of treatment gives an opportunity for the application of the principle, now so widely recognized, that the ideal to be aimed at in opening a bubo is to make a hole as small as is compatible with drainage, so as to expedite after-healing, the old treatment of slashing open so often leaving a large, slowly healing ulcer. Under a sandbag a suppurating bubo requires only a very tiny opening, as the pus, as soon as formed from the crumbling glandular tissue is squeezed out on to the dressing. The part of the gland that is being absorbed is helped to do so by the pressure, and that breaking down is quickly removed by the same.

As many R A M C officers of experience must have used this treatment in some form or another, their opinions as to its relative usefulness would be of great value.

* In the large woollen factory of the Bhagalpur Central Jail, where large quantities of wool are handled before spinning into yarn, we have never noticed or heard of any cases of Woolsorter's disease, except one doubtful case in an European Assistant.—ED, I M S

THE
Indian Medical Gazette

AUGUST, 1901

THE REAPPEARANCE OF EPIDEMIC
DROPSY IN CALCUTTA

THERE seems to be no doubt that the disease known as Epidemic Dropsy has made its reappearance in Calcutta after an interval of twenty years

We understand that Dr R L Dutt, I.M.S. (ret'd), was the first to bring the reappearance of the disease to the notice of the Health Officer, and Dr Neild Cook is now collecting information as to the extent of the prevalence of this strange malady, and will be obliged if practitioners who come across cases will communicate with him. In its bacteriological aspect the epidemic is being investigated at the Medical College Laboratory by Captain Leonard Rogers, M.D., I.M.S.

The reappearance of this epidemic after so long an interval is a most interesting point in epidemiology, and the present cases so far, we understand, entirely support the accuracy of the observations of the Calcutta physicians of twenty years ago.

The best and fullest account of the disease will be found in the 12th volume of the *Transactions of the Epidemiological Society*, it was written by Colonel Kenneth McLeod, I.M.S. Full accounts are also to be found in the volumes of the *Indian Medical Gazette* for the years 1877-8-9-80 and 1894.

The disease has been concisely described as follows —

"A specific epidemic communicable disease running its course in from three to six weeks, and characterised by the sudden appearance of anasarca, preceded in most instances by fever, vomiting, diarrhoea, or by irritation of the skin, and often accompanied by a rash, by fever of a mild remitting type, by disorder of the bowels, and by pronounced anemia. The case mortality varies from 2 to 40 per cent,* death being sudden and depending upon œdema of the lungs, hydrothorax, hydropericardium, or other pulmonary

* [This rate of 40 per cent is probably too high. In his description of the disease in *Allbutt's System* (vol II, p 476) Kenneth McLeod puts the mortality at from 2 to 8 per cent.—Ed, I.M.G.]

and cardiac complications" (Manson, *Tropical Diseases*, p 276.)

The dropsy is the most characteristic and persistent symptom, the fever is rarely high, diarrhoea or dysentery may be present. Paucity of symptoms are absent, thus differentiating the disease from ber-ber. The rash is generally present, it comes on after the œdema and lasts from ten to twelve days. In some outbreaks the mortality was very high, in others low.

In the Calcutta epidemics of 1877-8, of 1878-9 and 1879-80, the disease appeared in the cold weather, and disappeared more or less completely with the approach of the hot weather. On the present occasion it seems to have appeared in the hot weather, so it is not impossible that we may have a more serious outbreak in the ensuing cold weather.

THE RECENT CALCUTTA GHI-ADULTERATION CASE

SOME months ago the *ghi* of perhaps the largest *ghi*-contractors in Calcutta was sampled and analysed by the officials of the Calcutta Municipality, and as the result of this analysis Babu P N Mookerjee, the Municipal Magistrate, inflicted a heavy fine on the firm in question. The Health Officer of Calcutta (Dr Neild Cook) is also analyst to the Corporation, but it appears that the *ghi* was entirely analysed and reported on by Babu J N Dutt, the Assistant Analyst, who alleged that he had found six per cent of vegetable oil in it, and further that he had detected the presence of vegetable oil solely by means of a colour-test with phospho-molybdic acid, called Welman's Test. The *ghi*-contractors then got the Municipal Magistrate to send the same samples that had been analysed by Babu J N Dutt to the Chemical Examiner to Government, Bengal (Captain C H Bedford, D.Sc., I.M.S.), and they were then subjected to two separate and independent analyses by the Chemical Examiner and by the Assistant Chemical Examiner, who found them of good quality and free from vegetable oil or any other foreign fat. The Chemical Examiner gave evidence in the Municipal Magistrate's Court and pointed out the utter impossibility of detecting so small an amount as six per cent of vegetable oil in any *ghi*. We have satisfied ourselves that this statement of his is supported by all the well-recognised authorities on the subject.

Furthermore, the opinions of the Chemical Examiners to Government at Bombay and Madras were officially obtained and, as will be seen, completely corroborate Captain Bedford's statements. Thus the Bombay Chemical Examiner (Major Collis Barry, FIC, IMS) certifies that "It is not possible to estimate so small a proportion as six per cent of vegetable oil in a *ghr*," and the Madras Chemical Examiner (Lieutenant-Colonel Van Geysel, FIC, IMS) states, "I do not think that it is possible and I do not know of any process by which it can be done. I feel quite sure that no chemist would undertake such a task."

Again the single test (Welman's) on which the Municipal Analyst depended for the detection of vegetable oil is regarded by all competent analysts as by itself quite untrustworthy. Wynter Blyth in his standard work on Foods (p 392) says of it "This colour test must not be too much relied upon," and the leading English authority on the subject (Lewkowitsch) in his "Chemical Analysis of Oils, Fats, and Waxes" (p 316) states as the result of his experiments that "several kinds of olive oil as also almond, arachis, and peach oils showed far less distinct colours than tallow oil and even lard oil. A slightly rancid lard behaved almost like a vegetable oil in Welman's test. Moreover, mineral oil and resin oil gave deep colourations, the phospho-molybdic acid test can, therefore, only rank among preliminary tests."

The Bombay Government Analyst says of it "I regard Welman's test as unreliable and I never employ it," while the Madras Chemical Examiner states "I would place no reliance on it. Welman's test cannot be solely relied upon," and lastly, we have seen that the Calcutta Chemical Examiner also states his opinion that the test is quite unreliable. Yet this was the sole test relied on by Babu J N Dutt to detect vegetable oil in the *ghr* samples!

But perhaps the most conclusive reason of all for attaching no weight whatever to the Municipal Analyst's results was the fact that Babu J N Dutt in showing Welman's test in court himself clearly demonstrated the complete unreliability of his analytical work. For it was pointed out (and acknowledged by the Magistrate) that not only was everyone of the test-tubes in which he conducted the tests in court in a very filthy state, but that instead

of measuring out the quantities prescribed of each reagent to be used, the Babu very roughly guessed at the amounts without any attempt whatever at measurement. The merest beginner in chemical work knows that dirty test-tubes and rough guesses at the amounts of reagents to be used are alone sufficient to render a test of no value whatever. However, the Municipal Magistrate attached no importance to such apparently trivial details and expressed himself as much impressed by the test conducted as described! We need hardly add that in so doing he showed how completely worthless any criticisms of his on analytical work must perforce be and his published "judgment" amply bears out this statement. No one who conducts tests in the way in which Babu J N Dutt demonstrated that he does, can claim the least consideration for any of his analytical results.

On appeal to the High Court, Justices Ghose and Taylor stated that, though inclined to admit the appeal, they did not see how they could do so as the whole of the *ghr*-samples had already been expended and therefore a further reference to yet another analyst was impossible. It will be observed that the main fact is ignored by them that this conviction was obtained solely on the ground that the *ghr* contained six per cent of vegetable oil, and we have seen that all competent chemical authorities agree that it is quite impossible to detect so small an amount as that by any process whatever. It is also to be noted that the High Court gave no decision whatever as to the scientific evidence in the case and further did not even consider it. The High Court Judges only decided on the legal points connected with the granting of a rule and on nothing else.

There can, therefore, be no doubt at all that a grave miscarriage of justice has occurred in this case, but, let us hope not in others which have been decided by the Municipal Magistrate on the obviously incompetent analyses of this Calcutta Municipal official. It has been shown that not only the three principal Government analysts in India but all well-recognised authorities in Europe and America are clearly of opinion that such small proportions as six per cent of vegetable oil cannot be estimated in *ghr* or butter, but yet, in spite of this complete unanimity of the highest chemical authorities in this and in other countries, a conviction has been obtained on these totally impossible grounds.

The sooner the analytical work of the Calcutta Municipality is placed in more competent hands the better, for in this way only can there be any guarantee that there shall be no recurrence of such travesties of justice as we have had to witness in this case

THE CHEMICAL EXAMINER'S REPORT (BENGAL)

THIS the 26th annual report of the Chemical Examiner's Department, Bengal, is submitted by Captain C H Bedford, D Sc, I M S, who succeeded Lieut-Col L A Waddell, I M S, LL D, as Chemical Examiner on 20th March 1900. The report, as usual, is a record of an enormous amount of work done, in the year 1900 the work was increased owing to a large number of elaborate quantitative commercial analyses required, and the staff consequently had to work hard and well. As an evidence of the care and exactness with which all analyses coming from this laboratory are done, we may refer to the system introduced by Captain Bedford of special control experiments in all important cases. These "controls" are *generally done by different analytical methods and by different analysts*, in this way the risk of experimental and personal error is, as far as possible, minimised. How successful this system has been is shown by the fact that on only one occasion has the correctness of Captain Bedford's results been questioned, and in this instance the laboratory analysis proved absolutely correct.

The following figures will give our readers some idea of the amount of work done in this laboratory, 1,067 cases of human poisoning, 524 of animal poisoning, 397 "stain cases," 20 miscellaneous, and 76 samples of preservative fluid were examined during the year in addition to 2,247 general analyses, making a total of 4,331 analyses performed during the year.

The human poisons found were of many kinds, opium heads the list, arsenic coming next. The cases of cattle poisoning were all due to arsenic except one due to strychnine. These medico-legal cases, however, are but a part of the work of the Laboratory, there were also 60 analyses of articles of food for the Commissariat Department, 646 analyses, chiefly of fulminate of mercury, for the Small Arms Factory at Dum-Dum, 4 analyses for the Fort William Arsenal, and 524 analyses of articles such as sugar, turpentine, lead, paints, wines, spirits, &c,

for the customs, 189 analyses for the Excise Department, of spirits of all kinds and opium, &c. In addition we may mention 25 analyses of medical stores, 40 of telegraph stores, 32 of salt, 395 of kerosene oil, 29 of sullage (for Mr Silk's experiments with a septic tank at the Presidency Jail), 62 of dynamite or other nitro-explosives, and 19 of fireworks. Moreover, there must be added 142 analyses of samples of water and many of other miscellaneous articles.

As usual the reports of the analyses throw much light on the methods of criminals and cases of arsenic poisoning, accidental, as in case of quack "spleen pills", homicidal, where white arsenic was ground on a curiystone and put into the family drinking water, suicidal (?) where the *post-mortem* symptoms were typical of irritant poisoning, and arsenic was found in the viscera, are given in detail. One interesting case of the rare occurrence of perforation of the stomach by arsenic, sent by the Civil Surgeon of Sylhet is reported, and another of the use of arsenic as an abortifacient. A case of poisoning by arsenic and mercury in the form of some quack medicine is also reported from Backergunge, and one from Chittagong where arsenic and mercury were given with sugarcandy to a boy by his step-mother. (In this case there was found an ulcer with a bright yellow margin in the stomach.) The following case illustrates the necessity for and the difficulties of an act to restrain the free sale of poisons. Mercury salts were found in arrow-root purchased from a bania's shop in Howrah. In one case in Midnapur metallic mercury was used, worked up into native cakes. As an example of the often disastrous consequences of the use of quack medicines a case of aconite poisoning is reported. The man (who died) took powders for chronic diarrhoea. In one packet of the drug no less than 36 grains of aconite root were found, and aconitine was detected in marked amount in the viscera. In another case aconite was found in 11 packets of a quack medicine examined. Fatal cases of *dhatūra* poisoning are also reported, by the use of quack medicines, and in the more familiar form of robbery by drugging. Cases of suicide by use of hydrocyanic acid are also recorded. Opium-poisoning of course also figures in the report. A fatal case of poisoning by yellow oleander seed is recorded in a woman in Dacca District. The following cases of well-poisoning are worthy

of record Two men threw some "medicine," and also the vomited and purged matters of a cholera patient into a well in Dinajpur District in order, it is said, to spread cholera infection. The two men had been "treating" cholera cases for some days before. Arsenic was found in the sample of water sent in. In another case aconite was found in a cloth packet taken from a well where it had been thrown by some evil-disposed persons.

The following case is curious. A woman confessed that she had murdered another woman (for two gold ornaments and Rs 9-12-0) by "placing a heavy tin box on her chest while asleep and seating herself on the box." Eleven ribs were fractured, and the liver and spleen ruptured.

The new chemical block was opened in December 1899.

The whole report is evidence of the good work done in the Chemical Examiner's Department, the methods of analysis have now been completely revised, and are quite abreast of those in use in Europe in the best specialist's laboratories.

LONDON LETTER

BRITISH CONGRESS ON TUBERCULOSIS

THE arrangements for the holding of the British Congress on Tuberculosis have now been completed. The meeting is to take place in the Queen's Hall, London, from Monday, July 22nd to Friday, July 26th. The programme includes scientific proceedings and social functions. The scientific work will be carried on in four sections, each having a president, vice-presidents and honorary secretaries, and subjects of discussion, speakers and papers have been methodically and fully detailed. The sections are (1) State and Municipal, embracing statistics, notification, milk and meat supplies and Sanatoria, (2) Medical, including Climatology and Sanatoria, (3) Pathology, including Bacteriology, and (4) Veterinary (Tuberculosis in Animals). The sectional discussions will take place between 9-30 and 1-30 on each day, and in addition public addresses will be given by Professors Koch of Berlin, Brouardel of Paris, and McFadyean of the Royal Veterinary College. There will be a public meeting at the close for the purpose of passing resolutions arising out of the work of the Congress. The social functions consist of receptions,

conversations and excursions. The Congress is under the patronage of the King and has a very distinguished roll of office-bearers. It promises to be a very important, if not historical, gathering. Tuberculosis is a ubiquitous and deadly blight, inflicting on man and animals great suffering and loss. It is, moreover, infectious and favoured by insanitary conditions. Some abatement of its prevalence and fatality has occurred under such knowledge and resources as have been already gained and applied, and it is not reasonable to anticipate that the clearer light which recent science has shed on the subject will result in fuller powers of prevention, and more efficient methods of cure. To both of these ends this Congress should materially contribute.

COMPARATIVE PATHOLOGY

THE inclusion of a veterinary section in the programme is an indication of the importance which the diseases of animals have attained in relation to the diseases of man. Common susceptibility and mutual infection constitute a strong bond which the study of bacteriology has brought into special prominence. Tuberculosis is the most familiar, if not the most important, illustration of this dual nexus, and from the strong motive of self-interest and self-protection the investigation of tuberculosis in animals has come to form an integral and essential part of the whole question, while the suppression of the disease in animals by legislative and other measures has come to be an object of consideration, secondary only to, but adjuvant of, suppression of the disease in man. What is happening in relation to this subject is but an example of the broad basis upon which it is necessary to work in all infective diseases, indeed in all diseases.

PRIZE ESSAYS IN TROPICAL DISEASES

THE *Journal of Tropical Medicine*, which is now published fortnightly, has announced three prizes of £10 each which have been presented by Lady Macgregor, Sir James Sivewright, KCMG, and the Hon E R Bellios, CMG, which are offered for the best essays on "The Best Method of Administration of Quinine as a Preventive of Malarial Fever," "The Duration of the Latency of Malaria after Primary Infection, as proved by Tertian or Quartan Periodicity or Demonstration of the Parasite in the Blood" and on "The Spread of Plague from Rat to Rat and from Rat to Man."

by the Rat Flea," the latter to be substantiated by experimental proof. The competition is open to qualified medical practitioners of all denominations and every nationality and the papers may be written in English, French, German, Italian or Spanish. The judges are Surgeon-General Hooper, Colonel Macleod and Dr. Manson. Essays are to be sent to the Editors of the *Journal of Tropical Medicine*, by December 1st, 1901. The subjects selected are interesting and possess important practical bearings. They are also subjects which have engaged the thoughts and no doubt the observations of many, and they have the additional merit of being limited to a particular question, and capable, therefore, of being handled concisely and positively. Essays submitted for competition for prizes are too often discursive compilations of very small value because the theme selected is too wide.

MEDICAL RESEARCH IN ENGLAND

MR. BALFOUR in the excellent speech which he delivered at the recent festival dinner of the "Polyclinic" expressed a well founded regret that this country was not so energetic and productive in scientific investigation and discovery bearing on the medical art as some others. The fault must be due to a lack of inclination, capacity, encouragement, means, opportunities or appliances—one or several. A want of inclination and capacity may be set aside as unsupported by evidence and inconsistent with the history and traditions of the race, a lack of competent workers need not be feared provided the means of work are forthcoming and the results of work are properly appreciated. The question therefore remains—Does England as represented by the Government, by public bodies, by the public generally or by private individuals fulfil its duty in this matter? In the matter of State encouragement and support scientific workers are not in this country so generously treated as in Germany and France, but it is more consistent with the genius of the nation that impulses and efforts of the sort should proceed from associated and personal initiation and enterprise rather than from authority. Good work is undoubtedly done under the direction of the Privy Council and Local Government Board and the British Medical Association, the universities and schools are centres and springs of useful energy in observation and research. There are also a few special associations and institutes which

concern themselves with collecting and distributing information on special subjects. But it must be admitted that the sum total of encouragement, sentimental and material, accorded to medical research is hardly commensurate with the extent, wealth and great responsibilities of the British Empire, and from some quarters a spirit of positive hostility is manifested which tends to repress and impede. The principal representative of this feeling is the antivivisectionist campaign which, although inspired by humanity, is conducted without sense and pushed to unreasonable lengths.

VIVISECTION AND SPORT

The *British Medical Journal* has recently undertaken a spirited joust with an extreme antivivisectionist agitator who went so far as to endeavour to divert the stream of charitable contributions from hospitals to whose associated medical schools licenses for vivisection were granted. It was pointed out that a ban of this kind would damage some of the most successful and popular London hospitals and deprive a very large section of the pool of aid in sickness which they had learned to seek and value. Faddists are not stopped by considerations which weigh with the reasonable and wise, and it seems to be a trait of the particular class of faddist that the higher animal creation is of less account than the lower.

The inconsistency of their position is that while they admit the propriety of using the lower animal creation for work, for food and amusement, they deny the legitimacy of employing them under humanitarian precaution, for the purpose of gaining knowledge which may be applied for the saving of human suffering and life. The victims of sport meet with infinitely more cruel treatment whether by being hunted or wounded than the subjects of physiological and pathological experiment and the motives to kill and worry to death are savage, while those underlying vivisection are laudable and refined.

6th June, 1901

K. McL

Current Topics.

PRIORITY IN MALARIA RESEARCH

SOME of our readers may remember an article published some years ago (*I M G*, 1899, p 15) in which we protested strongly against the attempt made by certain Italian observers to

gain some of the credit which we and others thought rightly belonged to Ronald Ross. The inner history of that period is now unfolded in a pamphlet published by Major Ross, which consists of a series of letters from Dr T Edmonston Charles, M.D., Q.M.P., a retired officer of the Indian Medical Service, now practising in Rome, to Major Ross. These letters were written from Rome at the time when the Italian observers were first endeavouring to follow Ross' investigations on the mosquito theory.

It will be remembered that, as the result of his five months' work, from March to August 1898, Ross had succeeded in completely demonstrating the life history of one of the avian parasites in *Culex fatigans*, and in infecting over 30 healthy birds by the bites of these insects, thus establishing the general laws of development and infection possessed by the group of organisms of which this parasite is a particular species. There, therefore, then only remained the less difficult task of repeating the same experiments in regard to the human species, one of which, indeed, Ross had shown to be developed in the "dapple-winged" mosquitoes. It will also be remembered that Major Ross' malarial work in this line was interrupted in August 1898 by his having to go to Assam to make another investigation into *Kala azar*. It will also be remembered that Ross had fully communicated the results of his work to Manson, Laveran, Nuttall, &c., and a full account had been published in the *British Medical Journal* of 18th June 1898, moreover, numerous previous accounts of his investigations had been published in our columns (*I M G*, May 1898) and in the *British Medical Journal* and *Lancet* in 1897.

The letters from Dr Edmonston Charles, published in the pamphlet we refer to, show clearly that the Italian observers had kept themselves very fully informed as to Ross' work, and were in constant communication with him, by the aid of Dr Charles, who took a very keen interest in the subject, and in Dr Charles' words (p 3) "they had followed very closely all Ross' work and talked fluently regarding details of it," though Grassi now states that his labours were independent of those of Ross (*Studi di uno Zoologo Sulla Malaria*, p 31). Again though Manson had published in detail an account of Ross' report on 18th June, and though that report was widely circulated before that date, yet though this was published before Grassi commenced his work, it is not even mentioned in his bibliography.

It is, therefore, abundantly clear that by the time that Grassi's preliminary note was first published (2nd October, 1898), he and his fellow-workers were fully acquainted with all that had been done by Ross. What the Italians did was to apply in fuller detail to the human malaria parasites the line of investigations

point out to them by Ross in a kindred avian parasite and in one form of the human parasite of malaria.

It is much to be regretted that these well-known Italian scientists should have gone out of their way to belittle the work of Ross. Every credit is due to them for the amplification of Ross' work and for the original work they have since done, but to them there cannot be, in all fairness, conceded the honour of having been the pioneer of these important investigations. This must be given to Ross, who was the first to follow up the hints given by Manson, to whom must also be given the credit of having outlined the theory, which it fell to Ross to be the first to prove.

THE COMPARATIVE LOSS FROM WOUNDS AND FROM SICKNESS DURING CAMPAIGNS

It is a belief among those who know nothing about the subject that the duties of a military medical officer are chiefly those of a surgeon and that amputations are his speciality. Those who have experience of war or have read the history thereof know well that sickness is a cause of far more mortality than wounds, and this has been an almost constant experience from time immemorial.

The sickness incidental to a campaign depends upon many factors, but upon none more than the length of a campaign. The only great example where more men were killed by wounds than by disease is the German Army in the Franco-German War of 1871. Here 33 per thousand fell by wounds and only 18 per mille by disease, but this result, an exception to the general rule, must be ascribed not only to the proper observance of sanitary precautions, but to the brevity of the campaign. Similarly had the Boer War ended with the surrender of Cronjé and the relief of Ladysmith, there would have been little opportunity for the facile pen of Mr. Burdett-Goutts.

This point is admirably worked out in Captain Munson's "Military Hygiene" (reviewed in another column) where it is shown that since the great military epidemics of antiquity it has been established as a general rule that armies suffer much less from wounds and deaths incurred in action than from disease, it is, however, scarcely to be expected that with the advance of sanitary knowledge the disastrous epidemics of bye-gone ages should be repeated in the future. In the armies of the Confederate States in the American Civil War of the 200,000 who fell in the struggle three-fourths were due to disease and only one-fourth to the casualties of battle. In the Russo-Turkish War of 1878 the Russians lost 102,799, of which only 16,578 were killed by the enemy. In the recent Spanish-American War for the five months of hostilities only 345 men were killed in battle, while 2,565 succumbed to disease.

FILARIASIS AND INTESTINAL PARASITES IN CENTRAL AFRICA

In an interesting note in the *Journal of Tropical Medicine* (June 15th) Dr C W Daniels state that *filaria nocturna* is found in many parts of Central Africa, but its distribution is not uniform. In the blood of 687 natives examined at night this embryo was found in 5 per cent of them. It is also stated that the distribution of elephantiasis corresponds with that of filaria. It is probable that in the Zambesi and Lower Shire River Regions the mosquito which conveys the disease is a large yellow *Culex* with banded legs, which has been identified by Theobald as *panoplietes Africanus*. It is noted that *Anopheles funestus*, so widely distributed in Central Africa, gave uniformly negative results when examined, though it is a fact that these filarial embryos can develop in several species of mosquito, including the *Anopheles*, as James has shown in India. Dr Daniels cannot disregard other factors than the mosquito, and the distribution of elephantiasis is probably connected with the habits of certain mosquitoes which in some countries feed in tanks and in others not.

Dr Daniels only found one example of *filaria perstans*, and he was able to get no clear account of any prevalence of "sleeping sickness".

In another article in the same issue Dr Daniels records some observations on the presence of intestinal worms in natives of Central Africa, on the same lines as Majors Green and Calvert, I.M.S., have reported in our columns. The figures quoted show a smaller degree of infection from intestinal parasites in Africans as contrasted with natives of Behari, for whereas Majors Green and Calvert have found that from 50 to 75 per cent of Behari prisoners are thus affected, Dr Daniels as a result of 251 examinations, only found percentages as follows — *ankylostomata* 10.8 per cent, *lumbici* 6.5, *trichocephalus* 3, *anguilula* 1-3 and *bilharzia* 4 per cent. Vesical calculus is said to be unknown in these regions.

KOPLIK'S SPOTS IN MEASLES

ANY sign or symptom which will make the diagnosis of the exanthemata more easy in the dark skinned races is valuable, hence we may quote the following from the *Pennsylvania University Medical Magazine* (February 1901) —

In discussing Koplik's spots, it will perhaps be best to start with Koplik's latest utterance on the subject (*Maryland Medical Journal*, February 1900, *Pediatrics*, April 1, 1900), in which he says "This sign is only of value as it appears on the buccal mucous membrane (the inner surface of the cheeks and lips). Any signs, spots or appearances on the hard and soft palate, the pillars of the fauces, the conjunctiva, are of no value and rather misleading, for signs and spots exactly similar to those described on the hard and soft palate and pillars of the fauces appear not only measles but also in röteln, scar-

latina, grippe and simple sorethroat. The buccal spots as described by me, appear only in measles, and in none other of the exanthemata, and to my positive knowledge in no other known disease of the mouth or any constitutional affection. They must be looked for in a very strong daylight. They must be seen in the discrete state, that is, small, irregular, rose coloured spots, with a very minute bluish-white speck, just large enough to be visible in the centre of the rose area. Patches of yellowish specks must be excluded. Koplik lays emphasis on their value in differentiating measles from röteln, and is of opinion that those cases reported in which they were absent were probably cases of röteln. J J Cotter (*Arch of Ped*, December 1900) reports an epidemic of 187 cases observed in the New York Foundling Hospital, with special reference to Koplik's spots. Eight cases were absolutely negative, ten were doubtful, the remaining 169 being positive.

In the last case of measles that we have had an opportunity of examining these spots on the buccal mucous membrane were quite distinct.

A REFERENCE to Major D G Crawford, I.M.S., (whose knowledge of the history of the Bengal Medical Service is unrivalled) shows that we omitted many names from the list in our last issue of Indian Medical Service Officers who attained to the F.R.S. the blue ribbon of science. To our list must be added the following names: H H Spiry, Nathaniel Wallich, J Zephaniah Holwell, H Falconer, J F Royle, Sir George King, Charles Murchison, and probably others, not to speak of men in the Madras and Bombay services whose names we have not obtained. Can any Madras or Bombay medical officer send us them?

In another column we have discussed the relation of certain Italian observers to the malaria theory. We have there shown how, in our opinion, Major Ronald Ross has good grounds for complaining that his work though known was ignored by the Italian writers, we have now before us a pamphlet in French by Dr Sauveur Calandruccio in which the writer (who is a Privat-Docent in Zoology in the University of Catania) bitterly complains that Professor Giassi has made free use, without due acknowledgment, of Calandruccio's work on the Termites.

WE are glad to see that Laveran has been appointed a member of the French Academy of Sciences, vice the late Professor Potain.

DR. STEPHENS, Mr Christophers and Capt S P James, I.M.S., have gone to the Duars to investigate cases of black-water fever.

At a recent medical gathering a speaker, to whose identity we will give no further clue than by saying that his name is known in connexion with removal of vesical calculi, happening to remark that in spite of competition and other

circumstances he was glad to say he was not in the workhouse, was interrupted by one of his audience with the witty rejoinder, "You have to break stones, though!"—*Lancet*

Reviews

The Theory and Practice of Military Hygiene.—By E. L. MUNSON, M.D., Captain, Medical Department, U. S. Army, New York, Wm. Wood & Co., London. BAILLIERE, TINDALL & Cox, 1901.

THIS large and handsome volume is one well worthy of possession by the Military Surgeon. Since the time that the later editors and expanders of Parke's "*Hygiene*" have more or less deserted Military for the wider aspect of Civil Hygiene, there is no book in the English language at all approaching in design and accomplishment this valuable work. It is to the credit of the Medical Department of the United States Army that such an excellent book should have been written, and we have little hesitation in congratulating Captain Munson on its appearance.

In dealing with a large book of this kind a reviewer is at a loss to adequately describe in a short space the enormous amount of work contained in it. As however such a volume must prove necessary if not indispensable, to those of our readers in military employ we propose to give them some idea of its comprehensiveness by briefly enumerating the list of its contents.

The first two chapters deal with the selection and development of the recruit, giving all details as to defects and causes of rejection of recruits, his physical training, the results of systematic exercise, overtraining, gymnasium, fencing, athletics, &c. The next chapter is devoted to the march in campaigns, the march step, length of marches, accidents of the march, blisters, *pied forcè*, heart-strain, &c. The next 60 pages give a good account of water examinations and water supplies, the relation of water to disease, and its purification. The following chapter on the soldier's ration is very complete, and gives abundant detail as to the regulations in force in various armies. In no other volume that we know of is so much information collected as is here given on cooking, cookhouses, baking and bakeries. All the various articles of diet are exhaustively treated of, including detailed accounts of various emergency or reserve rations, and complete analyses are given of an enormous number of concentrated and preserved foods or rations. The chapter on military clothing and equipment is also very well done and amply illustrated by pictures of various types of military gear in various countries. The military surgeon will read with interest the pages de-

voted to the foot gear of the soldier, and the illustrations depicting the deformities which result from badly fitting boots show the importance of the subject.

Chapter VII deals with camps and camp-sites and will well repay perusal, as also will the next on the sanitary administration of the camp. The numerous illustrations of various patterns of latrines are well worth study. Incinerators, garbage destroyers, crematories, &c., are described and illustrated. Chapter IX treats in a very complete way of posts, barracks, quarters and hospitals and, like all other parts of the book, it is copiously illustrated. The chapters on ventilation, heating and lighting are also very adequately treated. The fifty odd pages on disposal of excreta and the chapter on the personal cleanliness of the soldier are also good.

The chapters on military mortality and morbidity are treated in no work we know of so fully and thoroughly as in this volume, and the experiences of the armies of all countries are made use of. The next chapters on the diseases of the soldier are also complete and show evidence of recent and thorough study. The history of typhoid, "the most important disease affecting soldiers," is thorough and illustrated by examples of the wars of the past half century. The author takes no narrow view of the spread of typhoid, he recognises that the typhoid bacillus may enter either by means of water, food or air, and it is shown that in the recent war with Spain in camps where the tub system for the reception of excreta was in use, "careless handling and transportation by the scavengers resulted in the scattering of fecal matter, much of which was infected, broadcast over the camp."

The question of the comparative immunity of the Native races is fully discussed and with knowledge. It is a pity, however, that Major Freyer's premature statements about the positive reaction of Native's blood to the Widal test should be given further currency to, this, however, is not the fault of the author as these statements were only recently disposed of by Captain Lamb, I.M.S., in our columns (*Indian Medical Gazette*, p 123, 1901). The question of the transmission of typhoid by air and by flies is also discussed. Other diseases are also fully treated of, and the chapter on malaria is much more up to date and complete than that of Notter and Firth's recent edition. The chapter on Disinfection is also good. One of the most interesting as well as original chapters in the volume is that on "the habits of the soldier as affecting his efficiency." In this are discussed the questions of alcoholism, the canteen system, venereal diseases, their causation, prevalence and prevention, use of tobacco, tattooing, the amusements of the soldier, insanity and suicide.

A special chapter is devoted to the hygiene of hot and cold climates, tropical dietaries, artificial

refrigeration, insulation (Lieutenant-Colonel C J McCartie's article in our columns in 1899 being quoted), &c

The volume concludes with chapters on the hygiene of the troopship, on the disposal of the dead, and on sanitary inspections. This admirable volume concludes with the following words "it may be emphasised that while it is the function of the medical officer professionally to treat such cases of disease as may arise, it is his greater duty, as guardian of the public health in the military service, to prevent by watchful foresight, so far as is consistent with the progress of human knowledge, their outbreak and their increase."

We have no hesitation in strongly commending this volume to the attention of all military surgeons, while it is based on the author's experiences in the army of the United States it is by no means to be considered as referring to that Army alone. It is illustrated by examples, statistics and facts from the history of every civilised army, and will be found useful and valuable by military surgeons of every race and in every clime.

Surgical Experiences in South Africa.—By

G. H. MAKINS, F.R.C.S., of St Thomas's Hospital, late Consulting Surgeon to the South African Field Force. London: SMITH, ELDER & Co., 1901.

AFTER a careful perusal of this book, we have no hesitation in saying that it is one which is indispensable to the military surgeon and of interest even to those who have no surgical knowledge. It is the first book which has been published on the surgical history of the war, and deals with a subject which we presume will be still more fully dealt with when the medical and surgical history of this great war comes to be written.

The first impression which we gained from its perusal was that the violent changes which the reading of the letters of various correspondents at the front had led us to regard as inevitable have by no means taken place, and that the chapters on gunshot wound in books published before the war are after all not so much out of date as we were led to expect from the writings of casual correspondents in the London medical papers.

Mr Makins emphasises this point in the first page of his book, where he writes "I think the general trend of the observations goes to show that the employment of bullets of small calibre is all to the advantage of the men wounded, except in so far as the increased possibilities of the range of fire may augment the number of individuals hit, also that such variations as exist between wounds inflicted by bullets of the Martini-Henry and Mauser types respectively, depend rather on the form and bulk of the projectile than on any inherent differences in the nature of the injuries. Thus

in the chapter devoted to the general character of the wounds, it will be seen that most of the older types of entry and of exit aperture are produced in miniature by the small modern bullet, and that the main peculiarity of the deeper injuries is the frequent strict localisation of the direct damage to an area of no greater width than that crossed by narrow structures of importance such as arteries or nerves."

We need not follow Mr Makins in the interesting account of his service with the Field Force, he was at first attached to the Force under Lord Methuen, and much of his experience is drawn from the series of battles from Belmont and Graspan to Magersfontein.

Mr Makins estimates that about five per cent of the total injuries were shell wounds, another five per cent by large calibre bullets, leaving ninety per cent of the wounds to be produced by small calibre bullets.

He then goes on to discuss the question of the relative proportion of the killed to wounded. In the four battles from Graspan to Magersfontein there was an average of 12,420 men engaged, and of these 1,959 or 15 per cent were killed, wounded or missing, a figure which almost exactly corresponded to the total percentage loss in the Crimean War. If we add, however, the numbers receiving mortal injuries who died within the first 48 hours in the hospitals, we find the proportion of mortal injuries to total wounded reaches 19.9 per cent or 1 in 5.

"On the face of these numbers, therefore (writes Mr Makins) there is little ground for assuming that the change in the nature of the weapons has materially influenced the deadliness of warfare at all." This is explained by the distance apart of the combatants, and the well-known dislike of the Boers to come to close quarters. On another page Mr Makins shows that the experience of the present campaign has not justified the early prognostications expressed as to the great increase in the numbers and severity of the wounds among the combatants. This is attributed to the fact that the small calibre bullet does less mischief than the old bullet of the Martini-Henry type, and to the great distance separating the combatants. In striking force the Lee-Metford is the superior weapon, but the Mauser, from the construction of its mantle, is more likely to be deformed on striking a hard substance, therefore it is thereby the more capable of inflicting severe wounds. In fact those portions of Mr Makins' book are most instructive where he shows by illustrations and skiagrams the effects of deformed and ricochet bullets. On the question of the apertures of exit and entry it is stated that when the range is as short it is often difficult to tell the difference between the entry and exit, but the margins of the exit wound are apt to be prominent. The tendency of simple wounds was to run an aseptic course, a fact which must be

attributed to the bullet having become aseptic in its rapid flight through the air. One important circumstance is that the small bullet has little or no tendency to carry with it fragments of the soldier's clothing, in fact the finding of a piece of clothing in a wound is looked upon as evidence of the irregular impact of the bullet. Shock in the case of wound of the soft parts was not much in evidence, primary external hæmorrhage from the great vessels of the neck and limbs was not the cause of many deaths but a large number resulted from primary internal hæmorrhage. A remarkable feature of the small calibre bullet wounds was the formation of traumatic and arteriovenous aneurisms, of which Mr Makins gives a very complete and interesting account. Such injuries should not usually be dealt with surgically till some months after the receipt of the injury.

In the case of injuries of the joints, which formerly entailed the gravest anxiety to the surgeon, the introduction of the small calibre bullet has robbed these injuries of much of their importance, and "during the campaign direct clean wounds of the joints were little more to be dreaded than uncomplicated wounds of the soft parts," very striking evidence of the aseptic nature of the wounds, and of the harmless character of the projectile as a possible infecting agent. There is much of interest in the chapter on head injuries, the primary union of the scalp wound was an important point in prognosis, but in spite of the many surprising immediate recoveries, Mr Makins feels certain that a "long roll of secondary troubles from contraction of cicatricial tissue, irritation from distant remaining bone fragments as well as mental trouble from actual brain destruction await record in the near future."

As regards wounds of the chest, these were on the whole remarkably favourable, except when the heart or great vessels were wounded. The most troublesome complication, hæmothorax, was usually due rather to wound of the chest wall than to the lung itself. Mr Makins thinks that the favourable prognosis in these cases might have reasonably been expected, when we consider the youth and general good health of the soldiers.

Chapter XI, in which Mr Makins discusses injuries to the abdomen, was one which we opened with special interest, we remember that when the sending out of the Consulting Surgeons was first talked about it was generally thought that we should see then usefulness in the number of abdominal operations, and it is certain that the consultants went out with this end in view. The result, however, has been to show that these cases afforded but slight opportunity for surgical skill, and in Mr Makins' words "operative surgery scored but few successes." The fact seems to be that in cases where the bullet has perforated the intestine, abdominal surgery is

presented with special difficulties, on the field, with want of water, and sepsis everywhere around, and in a large number of cases where the abdomen was perforated the intestines seemed to have escaped altogether. Mr Makins is a firm believer that this is the explanation of the numerous cases of prompt recovery after apparently the most serious abdominal injury, and he endeavours to give an explanation of it as follows, the small intestine is exceptionally well arranged to escape injury, it is moveable, it is so arranged that in certain directions a bullet may pass almost parallel to the long axis of the coils, it is elastic, capable of compression, and light, and hence offers but a small degree of resistance to the passage of the bullet across the abdominal cavity. Mr Makins states that injuries to the small intestine in cases certainly diagnosed were almost always fatal, whereas on the other hand many tracks crossed the area occupied by the small intestine without serious symptoms of any kind resulting. In cases where the bullet crossed the line of *fixed portions* of the large intestine serious symptoms ensued.

We must, therefore, understand that it is not that small calibre bullet wounds of the intestines are of minor importance, but that the cases of perforating abdominal wounds which recovered *were those in which the small intestine escaped perforation altogether*. As regards the important question of operation, Mr Makins lays down the following rules—(1) A wound in the intestinal area is to be watched with care, in face of the numerous recoveries habitual abdominal exploration is not justified, under field conditions. (2) Excluding the above, two classes remain, first, those who die in the first twelve hours, whose general condition forbids any thought of operation. Secondly, patients with severe injuries, as evidenced by an escape of feces, the majority of these die whether operated on or not. Nevertheless *when attendant conditions allow* operation should be undertaken, but this can only be done in the field when there is plenty of time at the disposal of the surgeon.

We must now conclude our review of this valuable contribution to military surgery, it is one which no military surgeon can afford to do without. The volume is dedicated to Surgeon-General Sir W D Wilson and the civil and military members of the Royal Army Medical Corps, with whom Mr Makins worked in great harmony throughout, and for whose great and laborious work in the field Mr Makins shows much appreciation, and a full knowledge of its special difficulties.

A Treatise on Materia Medica and Therapeutics &c—By RAKHALDAS GHOSH, L M & S, Vol I HILTON & Co, Calcutta, 1901 Price Re 1 14 0

THIS is a small book with a big name but though small, it is astonishing the amount of

information on all departments of *Materia Medica*, *Therapeutics* and *Pharmacology* which is included in its 169 pages. The writer, Dr. Rakhaldas Ghosh, admits that "*Materia Medica* is not an attractive subject, but it must be learnt", and there is no doubt that the medical student who has mastered the contents of this compressed and condensed volume has little to fear of the examiner. The drugs are arranged alphabetically, and particular attention has been paid to the description of non-official preparations and to pharmacy and dispensing. Our author says that the classification of drugs "has been so nicely made by Dr. Hale White that he could not resist the temptation of adopting his plan with some modification". The chapters on pharmacy are perhaps the best in the book, and show a very thorough acquaintance with the art. The notes on the art of prescribing, prescription writing, elegant prescriptions, directions to the patient, on prescribing for children, and the chapters on drugs classified according to their pharmacological actions are very complete and full of information. In fact Volume I is so complete and crammed full of facts that we are left in wonder as to what remains for the next volume. Dr. Ghosh's industry is astonishing.

Manual of the Diseases of the Eye—By CHARLES H. MAY, M.D. New York: Wm. Wood & Co., London: Baillière, Tindall & Cox. Pp. 392.

We have nothing but praise for this most excellent little *Manual of the Diseases of the Eye*, which is intended for the senior student and general practitioner. Well arranged, well written, in clear, concise language, thoroughly up to date and profusely illustrated, we have perused it with pleasure. The student will find full lucid descriptions of the more common diseases of the eye, such as he will meet with in practice, together with a brief terse account of the more rare affections. As may be imagined in a book of this size the style is somewhat dogmatic, and theories are only briefly mentioned. This will be no loss to the student, for the views expressed and the treatment laid down, are eminently sound and practical. Nothing would appear to have been left out, and we can with confidence recommend it as highly adapted for the purpose for which it was written. A word of praise is due to the publishers for the clear type, and excellent illustrations, of which the 12 coloured figures are particularly good. It is altogether a most appetising little manual.

Current Literature.

PATHOLOGY AND BACTERIOLOGY

On the Ætiology of Tropical Dysentery by Simon Flexner—*Bulletin of the Johns Hopkins Hospital*, October 1900. This important paper commences with an excellent summary of recent researches of

this difficult subject. After referring to the various classifications adopted by different authors he goes on to speak of the evidence for specific causes under the heads of bacteria and protozoa. The former class include varieties of coli bacilli which are said to have obtained an increased virulence so as to be able to produce dysentery such as the B coli dysenteriae of Celli and Ficca. Ogata of Japan isolated a fine bacillus, which does not appear to have been found by others, while Shiga obtained results which will be referred to again later. On the other hand the disease has also been attributed to various cocci. The well known work of various observers on the amœbic coli is referred to, and the necessity of some means of growing and differentiating different varieties is pointed out. The experimental results with amœbic coli are not conclusive on account of the action of associated bacteria not having been excluded, although the experiments of Kartulis and Kruse and Pasquale with the contents of hepatic abscesses supposed to be free from bacteria carry considerable weight. The amœba may be the cause of a special chronic and relapsing form of dysentery, which is associated with liver abscess, while epidemic and another form of endemic dysentery is more probably due to some bacterium, although this is unlikely to be one which is a normal constituent of the alimentary canal, and it is for this reason that the results obtained by Shiga in epidemic dysentery in Japan are of importance. This observer has isolated an organism which he found constantly in dysentery, although not normally present in the intestinal canal, and which both produces similar lesions in animals, and agglutinates with the blood serum of men who have suffered from epidemic dysentery.

The author gives notes of three fatal cases of acute dysentery in which an acute inflammation of the mucous membrane of the large intestine was the main pathological lesion, while the submucous coat also showed infiltration of small round cells of a secondary nature believed to be due to the action of poisonous bodies. The nature of the cases was quite different from amœbic dysentery, and amœbæ were only found once in one of them, while even in this case they could not be demonstrated in the intestinal contents immediately after death. Both cocci and bacilli with the morphological characters of the coli group were found in large numbers in the affected mucous coat, but not in the submucous layer. Plate cultures were made from the intestinal contents both immediately after death, and in chronic cases from mucus passed in the laboratory.

The bacilli which were isolated regularly were found to belong to two groups. Type I, which was the commonest form in acute dysentery, closely resembles B. Typhosus in its cultural characteristics, but differs in some details, giving, for example, in litmus-milk a faint lilac tinge after 24 to 72 hours, which changes again into deep blue owing to the production of alkali after 6 to 8 days. It agglutinates with the blood serum of persons suffering from dysentery in many cases. Type II more closely resembles the B. Coli communis and forms gas in glucose agar stab cultures, which is not the case with Type I—a useful point in separating them. Type I is pathogenic for mice, guinea pigs etc., when injected subcutaneously, while in the case of cats and dogs lesions resembling dysentery have been obtained by feeding experiments, and the organism recovered from their stools. The dead cultures are also toxic. This organism resembles exactly that isolated by Shiga already referred to, while it was not found in healthy Filipinos or in those suffering from beri-beri. In addition to the litmus milk reaction it differs from B. Typhosus in showing less motility and greater tendency to loose it in artificial cultures, and in displaying a more uniform generation of indol and in not agglutinating with typhoid serum, although it does with that of dysentery cases. It does not, however, react with the serum of cases of amœbic dysentery. Small

animals have been protected by the inoculation of dead cultures against subsequent injections of virulent organisms, then serum obtaining strong agglutinating powers. Shiga has prepared the serum in larger animals and obtained good results in the treatment of acute dysentery with it. A laboratory assistant in Baltimore accidentally sucked some of the *Manilla bacillus* into his mouth and suffered from severe diarrhoea with the passage of blood and mucus and tenesmus. The author concludes that there is a bacillary and an amebic form of dysentery, and that further observations are necessary before Shiga's results can be finally accepted. Flexner's paper certainly affords much support to the Japanese workers, while minute differences between the different members of the coli group of organisms only emphasises the necessity of properly equipped laboratories and numerous workers in India if this country is to take its proper place in the scientific study of disease, a single discovery in which field may many times over repay the cost of their upkeep.

LEONARD ROGERS, M.D., M.R.C.I., F.R.S.

FOREIGN EXTRACT

The treatment of chronic suppuration of the middle ear.*—By Captain G. OSTINO, M.D., of the Royal Italian Medical Service

Translated By W. D. Sutherland

Nowadays the term "otorrhea" has been eliminated by the otologists from their vocabulary, as they consider it to be too indefinite, and merely a general term which indicates neither the sort of the pus formation within the ear, nor the nature of the morbid process. The long phrase "otitis media purulenta chronica" has only this advantage over the term "otorrhea," that it specifies more clearly the origin of the pus—the tympanic cavity, and excludes cases of suppuration of the external auditory meatus.

As a matter of fact, otitis media purulenta does not connote a single morbid entity, whose pathogenesis is one, and whose treatment is the same in all cases. For we have various forms of the disease, which are more or less severe, more or less curable, and more or less chronic as the case may be, and the factor which determines these differences in the course of the affection, its severity, and its duration is the seat of the disease, i.e., the affection varies according as the pus formation takes place in the mucosa of the tympanum, in its periosteum, in the attic, the ossicles, or the antrum.

It would therefore appear to be absurd to extol the virtues of this or that remedy as shown in all cases of chronic middle ear suppuration, and just as absurd to discuss the question as to whether conservative or operative treatment yields the best results, each having their value according to the indications present, and there existing no rivalry between them, for each has its own indications. Let us take a simple case—a case of otitis media purulenta chronica, which has become chronic as the consequence of a general disease (scrofula, tuberculosis, anemia, &c.), or of a local condition (retention or caseification of the purulent exudation), or of a chronic naso-pharyngeal catarrh, but in which the real anatomical reason for the suppuration is an inflammation of the mucosa of the tympanic cavity. In such a case treatment should be directed towards removing the secretion, and securing favourable conditions for the inflamed and hyperplastic mucous membrane.

An exit for the pus will be provided by enlarging the perforation of the membrana, if it be too small, and by prolonging it downwards if it be situated in the upper segment of the membrana. An action on the mucosa may be secured by one of two methods—either

by "dry" treatment, or by the instillation of "drops," but whichever of these is adopted, a preliminary cleansing of the external auditory meatus is required.

In days gone by a large syringe with three finger rings was the panacea for all discharges from the ear.

The "dry" treatment by means of boric acid is suitable for all cases of otitis media purulenta chronica in which the secretion is scanty, the perforation in the membrana large and situated in the lower segment, and there exist no polypoid granulations of the tympanic mucous membrane, nor any signs of bone disease in the tympanum or accessory cavities. The quantity of powder to be instilled must be small.

The following absolutely contraindicate "dry" treatment: a small perforation in the membrana, or a perforation situated in its upper segment, especially above Shrapnell's membrane, a profuse discharge, polypoid granulations, bone caries, mastoiditis, and impossibility of keeping the patient constantly under observation.

As to the method of treatment by the instillation of medicated solutions, what are the limitations to the action of these on the mucous membrane of the middle ear? The answer is conveniently derived from the recent experiments of Lewins on the cadaver, which lead to the conclusion that (a) in order that the instilled solution may penetrate into the tympanum, we must have a perforation of at least 1.5 to 2 mm. diameter, and (b) the further down, and the further back the perforation is situated, the more easily will the instilled solution penetrate.

From these experiments we can deduce the important conclusion that the instillation of a solution within the ear is of no use, whatever the substance of which the solution is made may be if the perforation is too small and in such a case we must, in accordance with the general principles of surgery, enlarge the perforation and, if necessary, carry our incision downwards and backwards.

The substances of which solutions are instilled into the ear are many, but that most in vogue at present is peroxide of hydrogen, which acts as a disintegrant and antiseptic. On contact with the tissues, and especially with blood clot, it decomposes into oxygen and water, and the oxygen being nascent acts mechanically as a disintegrator of organic matter, and becoming diffused throughout the tympanic cavity, as an antiseptic.

Polypi must be removed by one of the many snares such as that of Wilde, of De Rossi, &c., large granulations should be cauterised with chromic or trichloroacetic acid, small granulations extending over a considerable area may easily be destroyed by the application of alcohol (Poltzer) or better 4—100 boric alcohol.

I shall not stop to describe the technique of the extraction of polypi with the snare for this may easily be understood by any one who has the instrument before him. For the cauterisation of the granulations with chromic or trichloroacetic acid, a crystal of the acid is taken up with the point of an angled probe, and caused to adhere thereto, by being passed over a flame. It is then brought into contact with the part to be cauterised. The operation should be repeated only at intervals of three or more days, in order that the eschar may be thrown off in the meantime.

When the purulent discharge has ceased, there may remain a perforation of the membrana, and this, especially in the case of a soldier, may sometimes cause a return of the affection. It is, therefore, advisable to attempt to close the perforation by Okuneff's method—cauterisation of the margins of the perforation with trichloroacetic acid. This cauterisation should be carried out every 8 to 14 days in the case of small and medium sized perforations, and every 6 to 8 days if the perforation be large. Miot has had excellent results both as regards closure of the perforation and improvement in hearing in 49 cases out of 51.

There exists an entirely different variety of chronic suppuration, that in which the purulent otitis media is limited to the epitympanum, and which has been carefully studied by Morpurgo, Hang and—more recently—Garbini. In certain pathological conditions this structure may become entirely cut off from the tympanic cavity and then, with its numerous pouches, normal and morbid sacculations, ligaments and bony prominences and depressions it constitutes an inextricable maze from which the pus can find no free outlet.

It is this which constitutes the difficulty in treating such a case rationally. The precept *ubi pus ibi evacua* finds an insurmountable obstacle in the complicated anatomical arrangement of the parts. An incision from above downwards through the membrane will give free outlet to any pus which lies in the pouches of Prussak and v. Troeltsch, and this, happily combined with erosion of fungosities and cauterisation of granulations, will suffice to overcome suppuration confined to the external attic, i. e., that portion of the epitympanum which lies between the head of the malleus and the incus on the one side and the outer wall of the tympanum on the other (Botey—International Medical Congress at Paris, 1900). Lavage through Hartmann's cannula or instillations made when the patient is in the acrobatic attitude recommended by de Rossi, will rarely bring about this result for the former method can scarcely cleanse the epitympanum, as Lewin has pointed out, and the latter method presupposes a thorough cleansing of the parts in order that it may do good.

In cases in which we diagnose caries of the ossicles or epitympanum, we have at our disposal but two methods of treatment. Sexton's operation for the removal of the malleus and incus, and the radical operation. Regarding the special indications for either operation, and the results obtained therefrom, there exists a considerable difference of opinion amongst aural surgeons. Taking only the recent literature on the subject, we find that Schroeder states that in Ludwig's clinic 50 per cent of cases were cured of the removal of the malleus and incus, and that Ludwig in his private practice had obtained a cure in 80 per cent by the cases. Again, Kretschmann succeeded in bringing about a cure in 8 out of 10 cases (of the remaining two, one underwent the radical operation, and the other would not undergo consecutive treatment) and never found that the hearing became worse, but often that it became better. Brieger states that the results will be better and better, the more the operation is confined to those cases in which examination reveals a lesion which affects only or chiefly the ossicles and the space between them. Zaruko is mostly against Sexton's operation, but admits that in a very limited number of cases it may be followed by cure. In his opinion, the fact that the statistics of the operation show a cure in 50 per cent of the cases is due to the following causes: (a) some who have undergone the operation, could have been cured by a sufficiently protracted conservative rational method of treatment, or (b) the "cure" has not been controlled by observation extending over a sufficiently long period. A cure will follow if the only site of the caries be the ossicles and the epitympanum, but disease confined to these parts is very rare (Stocke, Reinhard, Grunert), for in most cases the antrum is also affected.

Passow and Stocke absolutely reject Sexton's operation as useless. It seems to me that with regard to this question there has happened that which happens with regard to all surgical novelties: having hit upon a new method of operating, the inventor and his disciples wish to extend its application more than the method really deserves. The chief indication for Sexton's operation is caries of the ossicles and of the bony walls which bound the attic, but this does not prevent us, when we have formed an outlet for the pus, and by successive manœuvres secured space, from demolishing the wall with the bone pliers of Faraci, and scraping the *aditus ad antrum*. I operated thus recently on

a lady who had for fifteen years suffered from a discharge from the ear, which was due to a lesion confined to the epitympanum and aditus, and within about a month the case was cured.

The first step in Sexton's operation is the excision of the membrana tympani, but I think that when one has to remove one or both ossicles, the membrane is almost always destroyed, and therefore it is enough to isolate the handle of the malleus as far as the osseous head, with two incisions—one in front and the other behind it—then Delstonche's ring, which cuts only on one side, is introduced, and cuts the tensor tympani and, when withdrawn with a slight jerk, removes the malleus. Delstonche's ring has over the polypus snare, which others use for this purpose, the advantage that it enables one to do two steps of the operation at once, while when using the snare, one has to do a preliminary tenotomy of the tensor tympani. In some cases the incus comes away with the malleus, it may be because it is normally more firmly connected to it than to the stapes, it may be because—as morbid anatomy teaches us—the incus is more frequently carious than the other ossicles. Where it is not thus removed, we have recourse to Ludwig's hooks, Zeroni's instrument, and Hoffmann's curette. In certain cases Sexton's operation may be done without general anaesthesia, local anaesthesia being secured by means of a 10 per cent solution of Hydrochlorate of cocaine. Gray recommends this mixture:

R Cocaine Hydrochl gr 1.
Ol anilin
Alcohol absol ãã m 10

The anilin oil and alcohol act by removing the water from the mucosa which then contracts and thus permits the liquid to reach the interstices better, and thus to act more surely on the nerve endings.

Stocke's first radical operation was a simple atticectomy preceded by an incision behind the auricle, the pavilion and cartilaginous meatus being displaced forwards. I shall not describe this operation, which for the past decade has taken its place in general aural surgery, I would merely remark that, at the International Otological Congress in Paris, Vacher proposed to perform atticectomy, without this auricular incision, by temporarily detaching a cutaneous periosteal flap from the upper wall of the meatus, by two longitudinal incisions, one in the interior and the other in the posterior wall of the meatus. This procedure, I think, merits the attention of aural surgeons, for by it is obtained sufficient light for the demolition of the wall, and it has not the drawback of causing post operative deformity.

With regard to the radical operation, properly so-called, of exenteration of the middle ear, aural surgeons have nowadays much restricted the indications for it.

Astier and Askhkenasi thus formulate these:

- 1 When cerebral symptoms appear during the course of an ear affection
- 2 When facial paralysis or paresis occurs in a case of otitis media purulenta chronica
- 3 When the character and quantity of the discharge do not change after removal of a polypus or of granulations from the middle ear
- 4 When there exist fistulous tracts in the external auditory meatus
- 5 When there exist cholesteatomata
- 6 When a fetid discharge, which has existed for years, resists all methods of treatment

The indications for the operation which are given by Maczewski, and by Manasse and Wintermantel are even more restricted.

Now how may we diagnose that the morbid process is confined to the mucosa of the tympanic cavity, or to the ossicles, or the attic, or the aditus, or the antrum? Leutert replies by observing the site of the perforation thus—

- 1 When the perforation is situated in the lower half of the membrana, and takes up nearly its whole

extent but does not touch the bony parts, we have to do with suppuration which is confined to the tympanic cavity, and which will yield to simple treatment—dry, liquid, or caustic, as the case may be.

2 When the perforation lies in the lower half of the membrana and touches the bone, there exists caries of the floor of the tympanum or of its anterior and posterior walls. Surgical interference in such a case is not advisable, because of the risk of wounding the very important structures in this region (the jugular vein, facial nerve and carotid artery), and therefore treatment must necessarily be palliative by means of medication of the parts.

3 When the perforation is situated in the postero-superior segment of the membrane, it indicates caries of the long process of the incus, and calls for early removal of the malleus and incus.

4 Perforation of Shrapnell's membrane above and behind the short process of the incus, is a sign of caries of the head of the malleus, and the head of the incus, and points to the necessity for removing these ossicles.

5 Perforation of Shrapnell's membrane in front of the short process of the incus, indicates suppuration without caries in the attic, and in this case Saxon's operation should be performed in order to evacuate the pus.

6 A perforation which has destroyed the whole of Shrapnell's membrane, is a sign of caries in the attic and antrum and is a decisive indication for the radical operation.

These indications do not appear to me to require to be taken as gospel, for clinical facts cannot be bound down by classifications, but they do nevertheless form a good basis of diagnosis, and in addition to them we have, for the recognition of caries of the tympanum and the ossicles, other means of acquiring knowledge such as the examination of the purulent discharge, and the use of the probe and chemical reagents.

With regard to the last Ferreri has modernised an old means of diagnosis employed by V. Froelisch, through the perforation in the membrana is introduced a pledget of wool soaked in a mixture of dermatol 10—100 glycerine, and this is left in contact with the walls of the tympanum for 24 hours, the dermatol, in presence of the sulphuric acid given off by the carious bone, decomposes and sulphide of bismuth is formed, which causes blackening of that portion of the pledget which was in contact with carious bone.

In conclusion I would say, with Lentort, that there does not exist one otitis media purulenta chronica but many, and that each variety is susceptible of a definite treatment, which will be conservative or surgical according to the lesions which are found on examination of the case. Otology, like every other department of general surgery, should be as conservative as possible. The saying of MacEwen to the effect that cases of middle ear disease which can be treated *per meatum* should be attacked *per apophysis mastoideam* because it is impossible to keep the middle ear and its adnexa aseptic, was vigorously combated, at the International Otological Congress held in London in 1899, by aural surgeons, some of whom stated that in hundreds of cases of otitis media purulenta of long standing, in which MacEwen would have operated, they had obtained a cure as the result of simple medication with antiseptics or caustics, or of much more simple methods of surgical interference such as removal of the malleus and incus, atticectomy, orision of the bone, etc.

ANNUAL REPORTS.

CHARITABLE DISPENSARIES, BENGAL

THE Annual Report on the working of the Charitable Dispensaries contains little enough comment to satisfy the new demand for the severe simplicity of unexplained statistics. We venture to doubt whether a brief résumé from the pen of Colonel Hendley would not be of more value than these annotated returns in

which figures and tables so largely predominate. But such is the present order of the day of him who must be obeyed. It is satisfactory to find that 513 dispensaries were open during the year, an increase of 19 during the year. The total number of indoor patients increased by 4.59 per cent, the total of outdoor patients was close on three and a half millions a substantial increase on the figures of the previous year. During the year in many districts the new independent Dispensary Committees with the Civil Surgeons as Chairman came into force. A large increase in the number of cases of small pox, cholera, dysentery, malarial fevers, diarrhoea, ulcers, &c., took place during the year which was certainly more unhealthy than its predecessor. Colonel Hendley gives a table contrasting the climatic and atmospheric conditions of the year with the public health of Calcutta and the Province. It is difficult from the record of only one or two years to draw any sound connection between meteorological conditions and the health of the province. The year 1900 was a bad cholera year, and the number treated were only a small percentage of the total deaths from this cause, over 629,000 cases of malarial fever were treated during the year, dysentery was also more prevalent. There were reported 19,610 deaths from small pox, but only 240 were treated in hospital, the Native of India seldom resorts to hospital for such a familiar disease as small pox. No less than 183,411 cases of worms were treated, we are glad to see that Colonel Hendley's scheme for providing microscopes for Civil Dispensaries is making progress, 37 hospitals having been supplied. We note that Jail Hospitals shall also be supplied with similar microscopes. As regards operations, the total number was 146,580, an increase of 1,201 over the former year, the most important were, trephining, 12, mastoid cells, 6, harelip 14, cataract, 2,388, excision of breast, 11, laparotomy, 28, enterotomy 3, colotomy 1, intestinal obstruction, 3, fecal fistula, 1, strangulated hernia, 27, radical cure, 63, abscess of liver, 44 (with 27 recoveries), penetrating wounds of abdomen 3, other abdominal operations, 18. We may note that no mention is made of any operations for appendicitis, though in the Calcutta Hospitals' report we noted a few. That no case of appendicitis should be operated on in the 513 medical dispensaries of Bengal surely proves rarity, unless the returns are incorrect. We note that 14 cases of piles were treated by the cautery, 58 by excision, and 62 by ligature. Litholapaxy has not yet taken its proper place in Bengal, many dispensaries not having full sets of instruments, hence we find 126 lithotomies to 93 of litholapaxy. Stone is, however, rare in Bengal proper. As regards hydrocele, we find 371 cases of tapping, 1,053 of tapping and injection, and only 27 of incision and 35 of excision. Tapping satisfies the ordinary native who will seldom agree to a more radical treatment. We note 61 scrotal tumours removed, and 12 ovariectomies. Heading the list of operators in the province we find Major C. E. Sunder, I.M.S., of Gava, followed by Major Green, Captain Deare, Captain Vaddox, Lieutenant-Colonel Macrae and Major J. T. Calvert. These figures are of little use as the total must depend on the period on duty, as well as the particular hospital or district. Assistant-Surgeons B. V. Gupta, Rajon Kanto Das Gupta and Nil Ratan Adhikari all performed over 100 operations in the year. Not much progress has been made in the extended use of indigenous drugs. Perhaps it would be best at first to try to extend the use of those which have received official baptism in the Addendum to the B. P. (I. V. G., p. 62).

Colonel Hendley devotes several pages of his report to an account of the various improvements and defects which he had noted in his tours of inspection. There can be no doubt that under his régime considerable activity has been displayed in hospital matters, and a large number of his recommendations have been carried into effect. Ambulance first aid training is now being taught to the police in a large number of districts. We note that in many districts the preparation of medico-topographical histories is well forward.

On the whole the report shows that an enterprising spirit is abroad in the Bengal Medical Department and, as the Government Resolution has said, the enthusiasm of Colonel Hendley, I.M.S., C.I.E., has been contagious.

CALCUTTA MEDICAL INSTITUTIONS

The total mortality and death rate in Calcutta and Howrah calculated on the census of 1891 was the highest ever recorded, but from the provisional census return of 1901, it appears that the population has so increased that the death rate works out (according to the new census) at 43.5. There is no doubt, however, that the year 1900 was everywhere in Bengal more unhealthy than the previous year. Plague accounts for an increase of more than 6,000 deaths. Lieutenant-Colonel Bovill, I.M.S., the Civil Surgeon of Howrah, points out the increase of the death rate, but doubts if this can be fairly ascribed to increased water logging as a result of the recently introduced waterworks. Drainage is, however, defective in Howrah, and extensive excavations and embankments due to railway extensions might well be remedied.

As regards Calcutta, the Health Officer, Dr. Neild Cook, reports an increase of more than 12,000 deaths over the previous year,

and plague accounted for more than 8,300 of this excess. Cholera also shows an increase of 844 deaths, more than the average, this being ascribed to the continued use of wells and tanks which are still largely used by the people in spite of the filtered water supply. As Colonel Hendley, I M S, says, the new water supply of many towns suffers in repute, because old surface wells and tanks are not filled up, and unfiltered water is often used by the careless inhabitants in place of the filtered supply in the pipes. Dr Cook notices the difficulty of enforcing vaccination in Calcutta, and believes that malarial fevers have increased "since the introduction of a good and sufficient water supply." This is probably due to the existence of wells and tanks as above noted, and to the numerous breeding pools for anopholes left by the hydrants all over the city, as Dr G M Giles, I M S, has shown for the towns of the N W P and O (J V G, p 51). As in Bombay so in Calcutta an increase of tuberculosis is noted. As we have already shown, this disease which has been called the "whiteman's plague" is a greater cause of death in India than in England. Major Dyson, I M S, the Sanitary Commissioner for Bengal, considers that filling up tanks and improving drainage are the two most important points to be attended to improve the health of Calcutta. Major Gibbons, I M S, the Police Surgeon and Superintendent of the Campbell Hospital, strikes now ground, he is opinion that there existed "a peculiar type of fever cases, with high fever and great prostration" which, if untreated as it would be in many filthy *bustis*, would be highly fatal. He believes that many such cases were returned as plague. It is a pity that it was not found possible to make a bacteriological inquiry into this new type of fever. Without a proper inquiry of this sort nothing definite can be said about it. The enormous amount of inspections done by the Port Health Officer is commented on in the Report. From one ship from a South African port no less than 17 cases of enteric fever were admitted to hospital. The outbreak is attributed to contamination of the drinking water by flies. Four hundred and sixty two vessels arrived from plague infected ports, but no cases were found in any of them.

As regards hospital attendance a substantial increase is recorded, due largely to the unhealthiness of the year, and the absence of any "plague scare." The Superintendent of the Alipore Hospital attributed the increased attendance to its increased popularity due to the amount of good work done there. The out-patient attendance at the Presidency Hospital also increased. The indoor attendance also shows an all round increase. Colonel Hendley considers that the recorded increase in the attendance of females is capable of still further improvement. The total number of beds available in the whole of Calcutta and Howrah is only 1,738, which cannot be considered large when judged by European standards, as regards special diseases, small pox was somewhat more prevalent during the year, but only 240 cases were admitted to hospital as few Natives will go to hospital when ill with small pox. In two successive years an outbreak of cholera took place among the in patients of the large Campbell Hospital. The fact that the Municipal Sanitary (i.e., night-soil) railway runs off immediately in front of the hospital is pointed out by Colonel Hendley as a very possible cause. The matter is engaging the attention of Government. The large increase of dysentery is attributed to the floods of September. The death rate per cent. in the Calcutta hospitals was 29 per cent, sure proof that cases did not apply for treatment till they had become advanced or chronic. Paragraph 36 of the Report is of considerable interest, it gives the total number of cases of enteric fever and of remittent fever treated in all the Calcutta hospitals during the past 27 years, and is remarkable as showing the rarity of enteric fever among the classes who frequent our hospitals, of the last 27 years, in no year did the total of cases of enteric in all the Calcutta hospitals exceed 59 (and this figure applies to the year 1900), the figures vary from 1 to 53, the average being only 21 cases per annum in a city with a population of $\frac{1}{2}$ of a million. This fact alone is enough to show the rarity of the disease among the Natives of India, the more so as more than half the cases were treated in the European Presidency Hospital. The cases returned as remittent average about 700 yearly. In 1900 there were 68 cases of cerebro-spinal fever admitted,—we have already published (J V G, Jan 1901, p 4) Major E. H. Browne's admirable report on these cases.

Coming next to surgery we find a total of 26,023 surgical operations performed, among which were 485 cataracts, 31 abdominal sections, 2 of enterotomy, 5 of colotomy, 24 for strangulated hernia, 55 for radical cure of hernia, 52 for abscess of liver (with 25 deaths), 5 of cholecystotomy, 12 of cystotomy, 7 lithotomies, 22 litholapaxies (showing the rarity of stone in Bengal), 80 for scrotal tumour, 12 of ovariectomy, 7 of oophorectomy, 48 on the uterus. In the Medical College Hospital we read of a total of 203 "more important operations," including 8 trephining, 3 of neprolithotomy, 13 litholapaxies, 14 for strangulated hernia, 34 for radical cure, 12 laparotomies, 54 scrotal tumours, and 3 excisions of the vermiform appendix, and 38 amputations. Colonel Hendley remarks with favour on the increased amount of surgery done at the Campbell Medical School Hospital. The number of operations

at the Bhawanipur Hospital has increased to 2,207, which result is highly creditable to Major Brown, I M S. We note that there were no litholapaxy instruments in the large General Hospital at Howrah. In the list of surgical operations Captain R. Bird, I R C S, heads the list with 316 operations, next came Lieutenant Colonel Saunders, I M S, with 226, then Lieutenant Colonel R. D. Murray, I M S, with 136, and Major Charles with 117. Assistant-Surgeon Debendranath Hazra has no less than 343 obstetric operations to his credit.

In the Eden Hospital the number of important operations was nearly double that of the previous year. Of the 11 ovariotomies 9 were successful (81.8 per cent), 3 were done by Colonel Joubert, I R C S, 8 by Lieutenant-Colonel Peck, I M S, Captain Walton, I M S, did 3 abdominal sections, and Captain Clayton Lane, 4.

We agree with the remarks of Colonel Hendley when he regrets the absence of a Medical Society from Calcutta. The report concludes with a brief note on the work of the Bacteriological Laboratory.

On the whole the report is one which reflects much credit on the hard worked officers of the Calcutta Medical Institutions.

THE LUNATIC ASYLUMS OF BENGAL

THE total number of lunatics in the asylums of Bengal has never yet exceeded 1,000, and the numbers newly admitted during the year have never been more than 205. It is remarkable that the figures have remained practically stationary for the past ten years. The percentage of recoveries to daily average strength varied somewhat from that of the previous year, in Dacca Asylum the number of recoveries being less during the year 1900. The percentage of criminal lunatics in the total population was 53 per cent, or practically equal to the figure for the previous year. The accommodation was sufficient. In 1900 only 37 persons became insane or were recognised as insane after imprisonment. Of the 234 lunatics admitted to the various asylums during the year by far the larger number (*viz.*, 160) suffered from acute or chronic mania, 32 had melancholia, 12 suffered from dementia, 2 from idiocy, 2 from mental stupor and 5 from delusional insanity, to this must be added 21 "declared to have recovered" or not yet diagnosed at the end of the year. It is remarkable that there was not a single admission from general paralysis of the insane. Of the 234 admissions the "cause" was said to be unknown in 154, there were 22 cases attributed to moral causes, and 53 to physical causes, chiefly *gunja* and *blang*, in 16 cases heredity, and in 7 epilepsy.

The general health of the year was not good, and this is reflected in the sickness and mortality in both Jails and Asylums in Bengal. The percentage of deaths rose from 9.6 to 10.6, and there was a large increase in the numbers admitted to the asylum hospitals. There was an increase in the numbers admitted for fever and dysentery. In Dacca the newly admitted lunatics were usually received in very bad health. The increase in tubercle of lung cases in Dacca is chiefly among the longer residents in the Asylum. We are glad to see that in that Asylum and at Berhampore isolation of infected tuberculous lunatics is carried out as far as is possible. Frequent lime washing and scraping of the wards and buildings used by these cases is imperative and is carried out. The unsanitary condition of the Patna Asylum is notorious, and it will be closed as soon as the new Central Asylum at Berhampore is completed. In two asylums successful operations for cataract have been performed on lunatics. The sanitation of the asylums has received much attention from the Medical Superintendents, in all asylums the (so called) prophylactic issue of Quinine has carried out, in Berhampore the issue of Quinine with iron was followed by the disappearance of 'fever'. We are glad to see that the plans and estimates for the new Central Asylum at Berhampore have been sanctioned and that the work is to begin at once. There were 53 European lunatics confined in the Bhawanipur (Calcutta) Lunatic Asylum, 16 having been admitted during the year. The causes given for the insanity are heredity, 2, study (if over study), 2, injury, 1, cholera, 1, moral causes, 2, and unknown, 8. Mania was among them the most usual type of insanity, next delusional insanity and melancholia. No mention is made in the report of any amusements for lunatics, or of their industries.

MADRAS ASYLUMS

In the three Madras Asylums, at Madras, Vizagapatam and Calicut, there were 805 male and 116 female civil and military lunatics, it will be noted that the proportion of female lunatics is greater in Madras than in Bengal. Of the 161 admitted during the year mania accounted for no less than 116, melancholia, 20, dementia, 15, idiocy, 1, and "other types," 9, figures which do not differ greatly from the proportions obtaining in Bengal. In Madras only 2.4 per cent. of admissions are attributed to *gunja* compared with 10 per cent. in Bengal. A large number of cases are, however, in Madras attributed to heredity and to moral causes. The accommodation in the Madras Asylums was at all times ample. The lunatics generally increased in weight during

their stay in the Asylums. The chief industries were gardening, weaving, farming and working in tin and in food preparation. In the Madras Asylum football, croquet, chess and drafts were arranged for. Newspapers are supplied for those who can read, and many special treats in the way of acrobat performances, jugglers, bands, &c., were provided for.

On one occasion even a boating party and a gymkhana was arranged, and in every way it appears that in the Madras Asylums much attention is paid to these very necessary entertainments. It is satisfactory also to see that many Native gentlemen take an interest in the Asylum. The year on the whole was more healthy than the previous one. In Madras 22 patients had to be fed by the nasopharyngeal tube. Seven out of 41 fatal cases were due to tubercle, and 5 are attributed to "privation." There was an outbreak of influenza at Vizagapatam in the month of May. On the whole the report on the Madras Asylums is very satisfactory and shows that a great amount of attention is paid to the welfare of the inmates.

THE RAJPUTANA MEDICAL REPORT

It is a pity that this report cannot be published at an earlier date. It was only printed in March 1901, though Lieutenant-Colonel French Mullen, I.M.S., the Administrative Medical Officer, submitted it so long ago as August 1900. A report which refers to the year 1899 cannot be of much value in the month of August 1901.

"In the Western States of Rajputana and in Bikanir no rain fell worth mentioning." This prepares us for the fact that the year was a famine one, and as such naturally marked by small pox, cholera, fever, diarrhoea and dysentery. Cholera was absent in Ajmere Merwara, but very prevalent in the neighbouring Native States. It appeared in epidemic form in November 1899, having been, it is believed, imported from Hissar. To the fortunate co-operation of officials and people is attributed the immunity from the disease so far in Rajputana.

As usual much attention is paid to surgery in the Rajputana Hospitals, and the number of operations performed by the various medical officers is very large, so we note that the late Lieutenant-Colonel A. Adams, I.M.S., did no less than 610, and Miss Adams, M.D., 26 cataracts. Lieutenant Colonel Adams headed the list with 691 operations and Lieutenant Colonel P. Durrell Park, I.M.S., 615. There were 15 Commissioned Medical Officers employed in Rajputana, including 3 on special Plague or Famine Duty.

The Report gives an account of the terrible results of the failure of the rains, the mortality among cattle is noted as having been "appalling", and the necessary consumption of impure water led to much mortality and sickness from epidemic diarrhoea, cholera and dysentery. The A.M.O. noted that those who joined the relief work early remained in good health, but those who wandered about with their cattle in search of pasture suffered severely. One of the most striking facts noted as showing the straits to which the people were reduced is the description of the people eating the soft stone, called locally *pila bhata*. This stone is friable and easily ground to powder, and were largely used to give bulk to the meagre meal. It does contain an oleaginous substance which possesses some nutrient value, another "famine food" used was the bark of the tree, *Khejri* (*Prosopis spicigera*).

We can well understand that all medical officers and their subordinates have had much harassing and continuous hard work.

THE REPORT OF THE CHEMICAL EXAMINER AND BACTERIOLOGIST, NORTH WESTERN PROVINCES AND OUDH

The Annual Report of the Chemical Examiner and Bacteriologist to the North West Provinces suffers severely from the compression prescribed by a strong Viceroy and the Government of India. It is worth noting, however, that in two reports lately published which have literally obeyed the orders of Government the Local Governments concerned have complained that the compression has been carried so far as to almost do vitiate the report. It is not easy to please everyone, however as regards Mr. Hankin's report we are in the position of poor Oliver Twist and beg for more.

Mr. Hankin's report is in two parts, the first devoted to Medical and Chemical Work and the second to Bacteriology.

There is little interest in repeating the statements that the number of poisonings were 258 as compared with 240 in the previous year. If this is the sort of thing that the orders of the Government of India are to result in, we may prophesy a speedy reversion. The total number of chemical analyses amounted to 1,736, of these 627 were human poisonings and 232 animal poisonings. As usual arsenic heads the list, closely followed by opium, 2 cases of ptomaine poisoning are included. In one case, where a person was killed by an explosion, the yellow colour of the injured tissues gave rise to a suspicion that the explosive was picric acid, but it was found to be yellow arsenic, a constituent of certain native fireworks.

The bacteriological department suffers from the same viceregal compression, and consequently there is little to note. The number of articles bacteriologically examined rises steadily each year. It is interesting to note that the filtration of the water supplies in six large cities in the North Western Provinces and Oudh was very well filtered, the number of microbes per cubic centimetre ranging from 13 to 69, figures well under Koch's standard of 100 per c.c. The enteric bacillus and microbes resembling it were met with in eight out of 123 specimens of water examined. The cholera microbe and its allies were searched for in 109 samples of water and were detected in seven instances. Specimens from men or animals suspected to be suffering from plague were examined in 28 instances, and in 6 a microbe probably identical with that of plague was detected. Our columns (November 1900, p. 450) have already reported positive results from Mr. Hankin's method of isolating the enteric bacillus, though Hibbert considered it only of use in the absence of the colon bacillus. Mr. Hankin's method of identifying the plague bacillus by culture on salt agar has also been confirmed by Matzschita (*Zeits. für Hyg. und Inf.* 35, p. 485). Much of the Bacteriologist's time was taken up in experiments on that worthless fraud, the virus of Danyez. As in Australia so in Agra and Bombay the method proved useless. It might have been expected that if the plague microbe cannot destroy rats it was not likely that a variable virus, like that of Danyez, would do so.

Correspondence.

THE FREE SALE OF TABLOIDS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—Recently a well known and respected firm supplied to a patient of mine with three bottles purporting to contain Quinine Tabloids but which proved to contain Phenacetin. The matter was laid before the Burma Branch of the British Medical Association, which directed that Messrs. Burroughs, Wellcome & Co. be asked what steps they will take to prevent the occurrence of an accident likely to occur and which might be attended with disastrous results. Messrs. Burroughs, Wellcome & Co.'s reply is awaited. The Branch considers that drugs in tabloid form, many of which are quite undistinguishable, should be stamped with the name of the drug or coloured in some way so as to be readily distinguished. At present tabloids are supplied in bulk and bottled by retail firms which is likely to lead to error and possibly fraud.

Yours, &c.,

C. DUER, M.D., F.R.C.S.,
RANGOON, 7th July, 1901 { CAPTAIN, I.M.S., Hon. Secy,
Burma Branch, B.M.A.

"PLRNICIOUS MALARIA OR SURRA IN ANIMALS"

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The question raised by Veterinary Captain Burke as to the pathology of the disease known as "surra" among animals, and its being a species of astivo-antimal fever is a very interesting one, but at the same time, I should say, is hardly borne out by facts at present known. That other animals besides man share with him the questionable honour of acting as sources of malarial infection is, I fancy, more than probable, though not actually proved as yet. I do not pretend to pose as an authority on veterinary medicine or pathology, but with regard to this subject, it curiously enough fell to my lot a few years ago to be asked to investigate the cause of a serious and fatal outbreak of disease amongst the horses in the State stables here. During the investigation I made numerous microscopical examinations of the blood of a large number of animals suffering from what appeared to be a very severe form of pernicious anaemia. In the blood of a good few of these animals I found without much difficulty the *Trypanosoma Evansi*, the protozoal organism usually considered to be pathognomonic of "surra." I may here add that though I made repeated examinations of the blood of these and other animals suspected of suffering from this disease, I never could find this or any other haematozoon present therein, and curiously enough every animal died in whose blood I had found the trypanosome to be present, this fact I can vouch for, as every infected animal was isolated from those in whom I had not been able to detect the haematozoon. Anaemia and blood deterioration of different degrees must, I take it, more or less necessarily be associated with the presence in the blood of

any pathological haematozoon, the exact degree of anaemia present being directly in proportion to the amount of destruction and disintegration of the red corpuscles produced not only by the growth and multiplication of such organism within the affected body be it human or animal, but as the result of a coincidental elaboration and evolution of a "pyrogenic" toxin, which again reacts upon the system by disturbing the normal action of the thermo-static centre in the brain, enhancing the evil effects of the blood deterioration already produced. Few of us probably have opportunities of carrying on any very extensive experiments in the matter for want of the necessary material, but it would be interesting to ascertain if the prevalence of "surra" as such is coincident with that of malaria, whether it is prevalent to any marked degree in places such as Italy where the *restivo* autumnal parasites are found in abundance, and also to test the effects of quinine, which I regret I did not do at the time, as a blood disinfectant in these cases, though possibly it would act just as vigorously upon the trypanosome of "surra" as it is known to do upon the plasmodium of malaria.

Yours, &c,

BHARATPUR, } H E DRAKE BROCKMAN, F R C S
RAJPUTANA } Major, I M S

A QUESTION OF MEDICAL ATTENDANCE

To the Editor of THE 'INDIAN MEDICAL GAZETTE'

SIR,—The following case having recently come under my notice, and having given rise to a certain amount of discussion amongst doctors in the service whose opinion I have asked on the matter, I beg to forward it to you for the opinions of your readers on the matter.

Some six months ago a military officer whom we will call Capt. A, damaged his knee at hockey and was attended by Capt. B, the medical officer in whose medical charge he was. Capt. A was insured in an accident Insurance Company and requested Capt. B to sign the usual certificate to enable him to obtain indemnification from the Company. This Capt. B did without any remark on the subject or mentioning the fact that he was entitled (?) to a fee for it.

Recently however relations between A and B became more than somewhat strained, and in a correspondence that took place, Capt. B referred to Capt. A's indebtedness to him. Capt. A being unaware of such a debt immediately wrote asking the nature of it. Capt. B replied that he had signed the accident insurance certificate without claiming the fee for it.

Capt. A on this took the matter up in the abstract to the P M O of the station for his opinion on the matter as to whether the signing of the certificate came under the heading of medical attendance due to a military officer or not. The P M O was of opinion that it certainly did do so, but as another medical officer present was of a different opinion, Capt. A decided to pay Capt. B his fee, and did so and obtained a receipt (without the usual thanks however). Capt. A is now anxious to know whether or not an officer in medical charge who signs such a certificate is or is not entitled to this fee, for if he is, he has already defrauded four other doctors without having been in the least aware of it. The point must be of interest to both military and medical officers, and I should be glad to know the rights of it.

CALCUTTA,

June 27th, 1901

Yours, &c,

AN INQUIRING MIND

[We invite discussion on the above question. In our view medical attendance provided by the State to military officers cannot be held to include the granting of such certificates.—ED, I M G]

Service Notes

THE annual dinner of the Indian Medical Service was held at Princes Restaurant, Piccadilly, London, W., on June 13th, Surgeon General R. Harvey C.B., D.S.O., Director General of the Service, being in the chair. There was a good attendance, which doubtless would have been even better had it not been for the trying circumstances through which India has lately been passing—plague, famine, and the wars in China and South Africa having made heavy claims upon the services of Indian medical officers.

The usual loyal toasts having been given by the Chairman and duly honoured, "The Sister Services" was proposed by Surgeon General Sir Joseph Fayrer, who alluded to the good work that had been done by the services in the South African War and

quoted the report of the Royal Commissioners in support of his statements.

Sir Henry F. Norbury, Director General of the Royal Navy Medical Service, in replying, said that up to the present time there had been at the several examinations a sufficiency of competent candidates, and no gentleman had received a commission as a medical officer in the Royal Navy who had not been considered quite professionally competent by the board of examiners. The war in China had, as far as the medical department of the navy was concerned, at one time been beset with much greater difficulties than it had experienced in South Africa, and in China the way in which the arduous medical work had been carried out had been most favourably reported on by Vice Admiral Sir E. Seymour, G.C.B., the Commander in Chief of that station. Surgeon General A. F. Preston, A.M.S., also briefly acknowledged the toast.

"The Indian Medical Service" was then proposed by Surgeon General Harvey, who said that it would be manifestly improper for him to discuss the various schemes for the improvement of the medical services that were at once to be, or had been, put forward. These schemes would receive the most careful consideration from the Government of India, and he believed that the Service was patriotic enough to accept any changes which might be considered necessary in the real interests of the State. He did not think, however, that any change disastrous to the Service could possibly be in the interests of the State, and he therefore considered that the Service might regard whatever proposals might be put forward with equanimity. As these subjects were taboos, he would say a few words as to certain misconceptions which seemed to exist as to the conditions in the Service itself and the relations of the Government of India to the Service. There was said to be much discontent in the Service, but this was mainly due to the one great grievance—the constant interference with leave. Steps had been taken to remedy this, and he thought that most of the other grievances were more or less imaginary. A complaint had recently appeared in a medical journal that the pay on entry to the Service was 286 rupees. A statement of this kind, if true, would tend to make good men hesitate to enter the Service, and he could not conceive what good the author of it expected to gain by appealing to the papers instead of representing the matter to his departmental superior. The statement, however, was the reverse of true, for the minimum was raised from 286 to 317 rupees more than sixteen years ago, and further raised to 350 rupees four years ago, so that with this and exchange compensation allowance the pay of the junior officers was some 30 per cent. higher than the amount stated. Another grievance recently put forward was that the pensions of civilians was much larger than those of the Service, but the inventor of this one was probably not aware that every civilian contributed more than half of his own pension, while the medical pensions were given by the State without any contribution from the officers concerned. He had recently been asked whether it was true that medical officers had to act as butlers to their brother officers. This was a very coarse way of expressing the fact that regimental medical officers were frequently asked to be managers of the mess. In all regiments some officer had to do this, and he was proud to say that he had had the honour to be "butler" to the Central India Horse during the greater part of the time he had belonged to the regiment. He had seen a recent complaint that the work of a civil station and the responsibility of a jail were too heavy and exposed a man to risk of having to answer for the misdeeds of his subordinates, but he was glad to think that what most men wanted was the opportunity for hard work and responsibility, and he knew that if they did their work properly subordinate officials would have no chance of involving them in loss. One other point he would like to allude to. Two years ago their secretary had stated that he knew of no instance of a man receiving any proper acknowledgment for distinguished work in the ordinary lines of the profession. That was, unfortunately, true, speaking as he was of purely surgical and medical work, but the six appointments of Honorary Physician and Surgeon to the King were intended to reward such. A gentleman in a medical journal had, however, given a new complexion to the complaint by saying that with the single exception of Dr. D. D. Cunningham no man had ever been rewarded for good professional work. This statement also would tend to deter good men from entering a service where there were no rewards for merit, but in this extended sense it happened to be entirely untrue, since representatives of every other branch of the profession had from time to time been decorated for good work in botany, physiology, hygiene, obstetrics and gynaecology, medical jurisprudence, college and jail, plague, and famine, work, while a distinguished chemist's name was before the Government for recognition when he unfortunately died, and Mr. Haffkine, who, though not a member of, was in intimate relation with, the Service, had received a C.I.E. for bacteriological work in connexion with cholera and plague. The Government of India was frequently accused of indifference to the interests of the Service, and particularly of neglect to further medical research. He had recently read how the perverse imbecility of an administrative pedant has thwarted Major Ronald Ross in his most valuable and distinguished work by taking him away from the scene of

2 In reply, I am to invite attention to Home Department Resolution, Nos 34 46 of this date, in which the Government of

India have prescribed the general adoption of the proposed rule, and I am to explain that any officer who, within two years of entering the Jail Department, desires to leave it, must ordinarily revert to the duty, military or civil, on which he was employed previous to his appointment to a jail. If he was in civil employ, he will go to the bottom of the Provincial list, but if only a candidate for civil employment, he will have to wait his turn for such employment in the usual way.

GENERAL and other officers on the Staff, who wear a cloth waistcoat closed to the neck in mess dress, will, in future, wear instead an open white washing waistcoat without lapels and fastened by four buttons, gilt, flat (20 lines). A white collar and black tie will be worn with the white waistcoat.

THE King has selected and approved the Royal cipher to be worn on badges, buttons, and other devices throughout the Service wherever the Royal cipher is at present borne. The cipher consists of "E" and "R" impaled, with "VII" inserted in the lower loop of the "E," the whole surmounted by a crown, and the design has been made plain, without foliation, at His Majesty's express wish. No deviation whatever from it will be permitted, and no device or ornament will be placed above or upon it. Special instructions are given as to the crown, there being in use at present some half dozen crowns of different patterns, some of them of foreign shapes or deviations from the British. That now to be adopted, and to become the sealed pattern for the Army, is the Tudor "Henry VII" crown, stated to have been chosen and always used by Queen Victoria personally, and all other patterns are to be abolished.

WE hear that Surgeon General R Harvey made the speech of the evening at the farewell dinner at Liverpool to Major Ronald Ross, on his departure for West Africa.

It is rumoured that Surgeon General Sinclair, of Madras, will be the next Director General, I M S.

CAPTAIN BOURKE, I M S, joins the Bombay Mint.

MAJOR GEORGE S THOMSON, M B, M CH., I M S, has published a book on Plague (Swan Sonnenschein & Co, 1901), which we will review in our next issue.

LIEUT W GLEN LISTON, I M S, has gone to Bombay to act for Major Bannerman, I M S, as Superintendent, Plague Laboratory.

THE services of Captain Knapton, I M S, are placed at the disposal of the Bombay Government, and those of Captain Kirkpatrick and F D S Fayrer, I M S, at the disposal of Madras.

AN extra pension of £100 a year is sanctioned for Lieut. Colonel Rogers Harrison, I M S, on his retirement from 28th December 1900.

CAPTAIN BUIST, R A M C, becomes Personal Assistant to the P M O, Punjab Command, vice Captain Stanistreet, R A M C, on leave.

LIEUT COLONEL H P JERVIS, I M S, on return from leave resumed medical charge of 7th Bo Pioneers.

CAPTAIN J C ROBERTSON, M B, I M S, is placed on plague duty in the Allahabad District.

THE five weeks' leave granted to Colonel B Franklin, C I E, I M S, is cancelled.

THE leave granted to Major F J Drury, M A, I M S, Professor of Pathology, Calcutta, is modified to privilege leave of 22 days with furlough for fifteen months and fifteen days from 23rd May 1901.

THE New regulations for the Indian Military Family Pension Funds are published in the *Gazette of India* (June 22nd, 1901). The principal points to here note are that the present rates are to be abolished and what are called the "original rates" are to be substituted, this increase for Class I will amount to 15s 10d a year, for Class II to 12s 8d, for Class III to 9s 6d, for Class IV, to 6s 4d, and for Class V, to 3s 2d, which rates were in force up to 1st August 1890. The previous rates for children will also be changed.

Another important point is that the rates for Native members of the Covenanted Medical Service is reduced to the same rate as for European members, instead of as formerly being 5 per cent higher. It having been found that the Native lives are as good as those of European subscribers.

The one point not made clear is how the wrong calculations were arrived at in 1890.

LIEUTENANT COLONEL C MONKS, I M S, Port Surgeon, Aden, having been granted compound leave for six months (m c), Major S E Prall, M D, I M S, as appointed to act in his place.

CAPTAIN H M MOORE, I M S, is to act as Civil Surgeon, Aden.

CAPTAIN S EVANS, I M S, was appointed to be Assistant to the Civil Surgeon, Poona.

THE leave granted to Lieutenant Colonel O H Channer, M B, I M S, is modified to three months' privilege leave (two months' earned by famine duty) and three months' special leave (v p a).

LIEUTENANT COLONEL W P CARSON, I M S, has become Deputy Sanitary Commissioner, S D, Bombay.

LIEUTENANT COLONEL D F BARRY, I M S, Civil Surgeon of Cawnpore, was granted 41 days' privilege leave, Major D W Scotland, I M S, acting for him.

ON departure on six months leave of Colonel E Mair, I M S, Inspector General of Jails, Bengal, Mr W Leonard, Deputy Inspector General of Jails, acts as Inspector General, and Major W J Buchanan, I M S, goes to Alipore Central Jail as Superintendent and Deputy Inspector General of Jails, Captain C R Stevens, I M S, officiates as Superintendent, Central Jail, Bhagalpur, as a temporary measure.

THE services of Captain C H Watson, I M S, are replaced at disposal of the Military Department, and those of Major G T Mould, I M S, at the disposal of the Central Provinces.

LIEUTENANT H INNES, I M S, acted for some time as Civil Surgeon of Roorkee in addition to his military duties.

CAPTAIN A LEVENTON, I M S, Civil Surgeon of Silsagar, Assam, got three months' leave from 12th July. Major E A W Hall, I M S, also was granted three months' privilege leave from 12th July and Captain E C MacLeod, I M S, was to act for Major Hall as Civil Surgeon, Lakhimpur. Assistant-Surgeon F G Henderson was to hold charge of the Goalpara District, vice Captain MacLeod, I M S.

THE services of Captain W D Hayward, I M S, are placed permanently at the disposal of Bengal. He has recently been on military duty in Mooltan.

THE special China privilege leave of 90 days must be taken within a year from the return to India of the officer concerned, this 90 days leave is a substitute for the ordinary military 60 days.

CAPTAIN F P CHAPMAN, I M S, is appointed to officiate as Civil Surgeon, Raipur, C P, and to have charge of the Central Jail there in addition to his other duties.

THAT the medical profession at home does not agree with Mr Brodrick in his treatment of the late Director General, A M S, Surgeon General Jameson, C B, is evidenced by the list of important names on the Committee for arranging a public dinner to the Surgeon General.

SURGEON GENERAL R HARVEY, C B, I M S, F R C P, attended the farewell dinner to Major Ronald Ross at Liverpool, previous to his departure for West Africa.

CAPTAIN C D DAWES, I M S, is appointed to the medical charge of 39th Garhwal Rifles and Captain F H Watling to that of 44th Gurkha Rifles from date of joining. Captain Watling was lately, we understand, at Wei hai Wei with the China Regiment there.

CAPTAIN W W CLEMESHA, I M S, has been appointed Medical Officer of the new 48th Pioneers, and Captain R P Wilson, I M S, to charge of the new 49th Garhwal Rifles.

ON his return from China Lieutenant Colonel L A Waddell, I M S, LL D, becomes Medical Officer, 13rd Gurkha Rifles.

DR A. W REID acts as Civil Medical Officer of Burdwan during the absence of Captain J C S Vaughan, I M S.

CAPTAIN S P JAMES, I M S, has come back from China, to join the delegates of the Royal Society Malaria Committee.

With regard to the appointment of Staff Surgeoncies and Medical charges of Cantonments, the Government of India have decided that the alternating of two classes of appointments between Officers of the R A M C and I M S, is an equitable arrangement, and all that is necessary to meet the requirements of this rule is that the appointments shall, on the whole, be divided as equally as possible between the services

We were glad to see that the *B M J* and *Lancet* both recognised the excellent amount of work being done in tropical disease by I M S men as evidenced in the last report of the Sanitary Commissioner with the Government of India

FOUR and a half out of the seventeen Field Hospitals in China return to India at once, and the following Medical Officers — Lieutenant Colonel Fooks, I M S, Major McGill, R A M C, Captains P Mulvaney, J Bourke, J Entrican, H Knapton and Lieutenants Cox, Leicester, Elwes and Tucker

A CORRESPONDENT writes to us contrasting the way in which the Royal Society has honoured the scientific work of officers in the I M S with the scanty measures of reward for good professional work granted by the Government of India " 'Tis true,' 'tis pity, and pity 'tis 'tis true'

CAPTAIN G C LAING, M B, I M S, is appointed Superintendent, Central Prison, Hyderabad, Sindh

CAPTAIN J L MARJORIBANKS was appointed to act as Assistant to Health Officer, Port of Bombay, pending further orders

We are glad to see that Captain W D Sutherland, I M S, has returned in good health and is posted again to Saugor, C P, as Civil Surgeon. While in Europe he has been able to effect many exchanges between this Gazette and the leading German, French and Italian medical papers

LIEUTENANT COLONEL CHARLES ADAMS, M B, is permitted to retire from 1st July 1901

LIEUTENANT COLONEL R J BAKER, M D, I M S, has been granted privilege leave for two months and 23 days and furlough (m c) for nine months and eight days, and Major J G Hojel, M B, I M S, acts as President Surgeon, 2nd District, Bombay

FIRST CLASS ASSISTANT SURGEON W B GEORGE has been appointed House Surgeon to J J Hospital, Bombay

LIEUTENANT COLONEL J C C SMITH, I M S, Civil Surgeon of Saharanpur, is granted three months' privilege leave, Major D W Scotland, I M S, acts in Saharanpur

CAPTAIN A N FLEMING, M B, I M S, is transferred from Medical charge, 1st Infantry, to that of 1st Lancers, Hyderabad Contingent, vice Lieutenant Colonel F J Doyle, I M S, retired

LIEUTENANT G KING, M B, I M S, is transferred to the medical charge of 1st Infantry, Hyderabad Contingent, vice Captain Fleming, I M S

COLONEL A M BRANFOT, M B, C I F, I M S, is appointed P M O, Bangalore, vice Colonel I I McGann, I M S, and Colonel A F Dobson, I M S, is appointed P M O, Rangoon Command, vice Colonel Branfot, I M S

It is rumoured that Major A H Nott, I M S, of Hazaribagh, may succeed Lieutenant Colonel A Leahy, I M S, as Civil Surgeon, Darjeeling, at the end of the year

DR F W TWIDALE is appointed to act as Civil Medical Officer of Jessore

SURGEON GENERAL A F PRESTON, M B, A M S, who acts temporarily as Director General A M S, at the War Office, has been P M O in Ireland. He served in the Afghan War, was severely wounded at Malwand, was mentioned in despatches and promoted to rank of Surgeon Major. He has just received the distinguished service pension of £100

SURGEON GENERAL BPATSON, I M S, has written a History of the Indian Medical Service which will shortly be published.

CAPTAIN F O MELL, I M S, M B, is appointed President of the Municipal Committee, Badnur, in Betul District, C P

LIEUTENANT COLONEL W E GRIFFITHS, I M S, is granted furlough for 1 year and 156 days

CAPTAIN E E WATERS, I M S, is granted an extension of leave for four months

LIEUTENANT COLONEL S H BROWN, I M S, is granted an extension of three months' leave

LIEUTENANT J G CHURTON, R A M C, is granted six months' leave

MR BRODRICK is determined to have his Committee on Army Medical Reform well under his thumb. It is stated that the post of Director General will not be permanently filled up, till the Committee has made its report. It is rumoured that the War Minister intends to manage the Army Medical Department by a Committee of which he will be President and the next Director General a member

DR BONANIA, I M S (ret'd), advocates the establishment of gardens under Government control in India for the cultivation of choice fruit trees, &c

THERAPEUTIC PREPARATIONS

We have received specimens of Messrs Burroughs, Wellcome & Co's Tabloid Ergotin and Strychnine. Each tabloid contains 3 grains of Extractum Ergotæ B P and 1-30th grain of sulphate of strychnia. These tabloids form a very elegant way of administering this combination of drugs

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co., Calcutta

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co., Calcutta

Annual Subscriptions to the *Indian Medical Gazette* Rs 12 including postage

BOOKS, REPORTS, &c, RECEIVED

Report on Dispensaries, Assam
Report on Vaccination, Assam
Report on Jails, Bengal
Digest of Physiology, Vads
H Tilley's Nasal Suppuration
Williamson's Paralysis Agitans
Programme of Tuberculosis Congress
Ambulance Class Regulations F Pearce
Report of Sanitary Commissioner Bengal
Aphorisms, Definitions, Reflections and Paradoxes by Dr A. Rabaghati (Baillière Tindall and Cox.)

COMMUNICATIONS RECEIVED FROM —

Lt Col Jervois, I M S, Bombay. Capt. Delany, I M S, Calcutta, Lt. Marjoribanks, I M S, Poona, Capt. L. Rogers, I M S, Calcutta, Major H E Drake Brockman, I M S, Simla. Major E Roberts, I M S, Simla. Dr Bramachari, Calcutta, Dr Vads, Lucknow. Dr Patrick Manson, London, Dr D F Keegan, I M S, London, Capt. H Smith, I M S, Jullundur, Capt T H Symons, I M S, Kohima. Major J Garvie, I M S, Bhatpur. Miss Mildred Staley, Delhi, Dr A Neve Kashmir, Lt-Col T H Pope, I M S, Madras, Dr Lahiri, Durrbhanga, Col Keneth McLeod, I M S, Netley. Capt Fooks, I M S, Poona, Lt Col Waddell, I M S, Calcutta. Capt W D Sutherland, I M S, Saugor. Lt Col F W Wright, I M S, China, Lt Holdich Leicester, I M S, Poona

Original Articles.

NOTES ON THE PREVALENT DISEASES AMONG THE CHINESE IN PEKING

By H T WALTON, M.B., F.R.C.S.,

CAPTAIN, I.M.S.

For nearly four months this year I had joint charge with Major Mansfield, I.M.S., of a free dispensary for Chinese in Peking. Some observations on the prevailing diseases met with in that part of North China may be of interest.

Our patients belonged, of course, chiefly to the lower classes, but we had some who were in quite good circumstances.

The physical development of the inhabitants of Peking is excellent, as a class they are tall, big-chested, powerful men, and have no prejudices about diet. Whilst they consume large quantities of rice, they also eat all the meat that they can get, mainly mutton and pork. There is an abundant supply of fruit and vegetables, but milk is both scarce and expensive. Young children are habitually suckled by their mothers up to the age of three, or even four years, but the mother's milk is supplemented by other diet, after the age of one year. This prolonged suckling appears to be due to an idea entertained by the Chinese that it builds up a very strong constitution.

The climate of Peking presents great contrasts. For six months in the year it is bitterly cold, with frequent blizzards and dust storms. Again, for three months in the summer, it is exceedingly hot. The inhabitants, including almost the humblest beggars, are invariably suitably dressed for the temperature. As the weather gets colder, they put on more and more clothes of the nature of wadded quilts and sheepskin lined cloaks, fur caps and ear protectors are also worn in winter. During the hot months, the better classes go about in thin cotton or silk clothes, whilst the coolies are almost naked. The most unpleasant physical feature of Peking is the excessive dust. According to local opinion this comes chiefly from the Gobi Desert, but, whilst the frequent blizzards doubtless do bring much dust from outside with them, there is quite enough locally to account for the extreme dustiness. A cutting that was made in connection with a railway embankment in the Chinese city, showed about three feet of a loose sandy soil lying upon a thick bed of clay. The least wind suffices to fill the air with particles, and the extreme prevalence of various forms of conjunctivitis is, no doubt, due to the constant irritation of the eyes induced thereby. The nature of the subsoil also accounts for the large accumulations of stagnant water that collect after almost every shower of rain.

The commonest diseases met with, both medical and surgical, are tuberculous ones. Phthisis is exceedingly common, and often progresses with great rapidity. Probably the European medicine that is best known to the Chinese is cod liver oil—"foreign fish oil" they call it, and they fully recognise its value in consumption. I only saw one case of lupus of the face, and also a single case of leprosy, the latter with much mutilation of the foot. The specific infectious diseases are, I believe, very

common, though I only saw small pox and measles myself. I was told by a resident that scarlet fever and diphtheria both occur. I saw many children who had been intentionally inoculated with the contents of variola pustules. This generally produced a very free eruption all over the head and body, but with only slight constitutional symptoms. The eruption persisted for a long time, in one case for twenty days.

I met with no cases resembling enteric fever among the Chinese, although I made many inquiries about its occurrence, the answers that I received were so conflicting that I am not sure whether it is recognised or not. The doctor to the French Legation told me that typhus is common in Peking.

Malaria is much less prevalent than in India. During May and June coinciding with a fairly heavy rainfall, a good many cases presented themselves for treatment. tertian ague seems particularly common.

Many children with big spleens, some of them enormous, were brought for treatment, but I do not believe that the enlargement was always due to malaria.

Valvular disease of the heart is quite common, and in many cases one could obtain a history of previous illness resembling rheumatic fever.

Diseases of the lungs seem to be of universal geographical distribution, and Peking is no exception. Pneumonia and bronchitis are common, so, too, is asthma. I met with two cases of syphilitic laryngitis.

Bright's disease is common, both in the acute and chronic forms.

I saw many cases of great enlargement of the liver in children, who presented the typical teeth and other symptoms of congenital syphilis. They all improved considerably in general health, and there was distinct diminution in the size of many of the livers under specific treatment. No cases of diabetes came under my notice.

Beri beri, to my surprise, was not common. I had become accustomed, in Calcutta, to assuming that a sick Chinaman had beri beri until it was disproved, and the rarity of the disease among my Pekinese patients impressed me very much.

Disease of the nervous system were frequently met with among all classes of Chinamen. Cases of hemiplegia were constantly presenting themselves for treatment. In a few cases, iodide of potash produced very rapid improvement. I had well marked cases of spastic paraplegia (both in adults and in children), locomotor ataxia, infantile paralysis, pseudo hypertrophic paralysis, and progressive muscular atrophy.

I had also one case of contracture of the hip joint, which I believe to have been hysterical, in a man of twenty years of age. On admission the patient's left thigh was flexed considerably beyond a right angle—the limb was also somewhat abducted and everted. The head of the femur was in the acetabulum, and there were signs of present or past disease of the hip joint. The history given by the patient—a cooly—was that the limb had been in that position for the last eight months, and that it had been gradually drawn up to its present position in the course of one month. This had begun after the patient had recently been employed on some hard out-door work. There was no muscular wasting of the limb, and the patient was in good health. forcible attempts to straighten the limb, without anæsthetic, induced a hysterical condition, and complaints of much pain, but were followed by no signs of inflammation of the joint. Chloroform was given, and when the muscles were relaxed, it was found that adhesions had formed round the joint with adaptive shortening of the ligaments, etc., which prevented the leg being straightened. The adhesions were forcibly broken down, and the thigh brought almost straight. Complete extension appeared to be prevented by the tension of the muscles in front of the thigh. A weight extension apparatus was applied in the hope that it would produce complete straightening. However, the

patient was very restless and intolerant of the weight, which was accordingly removed after a week. In two days' time, the limb had gone back to its original position chloroform was again administered, a few more adhesions broken down, and the tensor fasciae femoris was divided at its origin this permitted the limb to be completely straightened. Both legs were then put up in long splints which were kept on for a week, and until the patient had had a good "talking to," and had promised that, if the splints were removed, he would not draw his leg up again. When I left Peking, the leg was straight, and the patient anxious for his discharge.

Headaches, both general and localised, and occasionally hemicrania, brought very many patients for treatment the favourite native method of treatment consist in applying plasters, about the size of a shilling, smeared with a black paste to the temples.

As already mentioned, the commonest surgical diseases met with in Peking are tuberculous ones. Cases of tuberculous disease of joints—hip, elbow and knee—are very numerous. It seemed quite like old times at home, to be putting up legs in Thomas's splints. Many children were brought with diseased joints of very long standing for which excision was required, there being much deformity and the skin riddled with sinuses. Favourable cases for treatment by extension and rest often presented themselves usually, however, as soon as the limb had been brought down straight, the parents would remove the patient, only to bring him back, after a month or so, as bad as, or worse than, before. I saw several cases of tuberculous disease of the tarsus one, in an adult female, was limited to the anterior portion. I proposed a Chopart's amputation, but the patient declined treatment. I had under treatment two cases of sacro iliac disease in young adults. Cases of tuberculous caries were also very common. One case of Pott's disease had well marked compression paraplegia with greatly exaggerated knee jerks and a spastic condition of the legs. I excised the entire metacarpal bone of the thumb—or rather its remains—in one long standing case of caries with much suppuration, with an excellent result, the thumb retaining almost perfect power of opposition and movement.

I saw four cases of cancer of the breast, all I think, scirrhus. Unfortunately they were all long past operation, with extensive ulceration and enlarged glands. The most advanced case was in a woman of twenty eight years of age. She had had the disease for eighteen months, and was then six months pregnant. The tumour was firmly adherent to the chest wall, there were enlarged glands in the axilla and above the clavicle, and the skin was just beginning to ulcerate in the neighbourhood of the nipple. She miscarried at eight months and came back to see me a fortnight later. The skin of the affected breast was then studded with numerous, very small, cancerous nodules, and there were two or three in the skin of the other breast. There was a very large excavated ulcer with rough bone at the bottom, the arm of the affected side was very much swollen and painful, and she had had several attacks of hæmoptysis.

I had one case under observation—a young man with a lump, about the size of a hen's egg, in the muscles of the front of the thigh. This was probably either a sarcoma or a gumma, there was no history of syphilis. I put him on large doses of iodide of potash, but he only attended for about a fortnight. There was then no apparent diminution in the size of the tumour, and I unfortunately broached the subject of operation. This scared the patient, and he never came back again.

Hernia is common. I don't think that the Chinese of Peking have any native forms of trusses.

I heard of, but did not see, a case of axillary aneurism.

Many of the children had a typical strumous appearance. Chronic lymphadenitis was very common, so too were enlarged tonsils.

Skin diseases are very prevalent, chiefly eczema, tinea tonsurans, tinea circinata, impetigo and scabies. Venereal diseases are exceedingly common, extensive tertiary ulcerations are frequently seen, as no attempt at systematic treatment appears to be made by native practitioners.

Ophthalmic cases, of all kinds, are also numerous. As already mentioned, the atmosphere is almost always full of dust, various forms of conjunctivitis, granular lids with pannus, distichiasis and entropion are the result. Phlyctenular conjunctivitis and keratitis are very common. I had one case of syphilitic plastic iritis, which, apparently, completely recovered under appropriate treatment. Cases of strabismus were not often seen. I saw one case of intra ocular tumour in a child. The eye was removed the growth arose from choroid at the back of the eyeball, but there was a second, smaller growth, apparently not continuous with the first growing from the uveal region. This latter growth projected as a light brownish mass into the pupil, had partially dislocated the lens forwards and prevented any view being obtained of the fundus, before enucleation. Microscopical examination of the larger growth, at the back of the eyeball, showed long spindle shaped cells, with a few round ones. Unfortunately, no examination was made of the anterior growth.

Cases of cataract were fairly common but were mostly immature, others had been "coached" with very bad results. I only managed to get one case fit for, and willing to submit to, operation. In this case, I performed an iridectomy and removed the speculum, intending to have the upper lid held up with a retractor. However, the patient seized the opportunity to screw his eye up tight and shot out the lens in the capsule. The result was excellent. Many cases of chronic suppuration of the middle ear came for treatment. I had a case of very severe vertigo of doubtful causation.

As is well known, the pride of the Chinese woman is the smallness of her feet. This is by no means confined to the upper classes but solely to the Chinese, as distinguished from the Manchus, who leave their feet alone. Chinese women have naturally very small feet and make them still smaller by tight bandaging, whilst they are children. All the toes, except the big toe, are doubled underneath the sole, and a sort of pincer is produced. But *il faut souffrir pour être belle*, and I had several cases brought to me in which too much zeal on the part of the mother had led to more or less extensive gangrene of the foot.

Several cases of bayonet wounds, and many of gunshot wounds came for treatment. Where the latter had been inflicted by "foreigners" with small bore rifles, the results of treatment were excellent. Notwithstanding the military occupation of the city and surrounding district, armed brigands abounded, and quite close to Peking. Many of these were armed with old fashioned pistols, manufactured apparently out of muskets of the "Brown Bess" type, with the barrel cut down. Out of these, they fired slugs, iron balls and other objects. One patient, an old blind man, came to me with the history that he had been sitting in his house the night before in a village about two miles from Peking. A robber appeared at the window and demanded money. The old man gave him a few coins, which were all he had, whereupon the robber fired at him through the window. There was no wound of exit the entrance wound was situated in the third right intercostal space, about an inch and a half from the edge of the sternum, and was of about the diameter of a rupee. A probe passed inwards towards the middle line, and a little back wards. It seems extraordinary that the bullet should have missed the heart and big vessels. There was neither hæmoptysis nor hæmorrhæ, and the wound had completely healed in ten days, the old man never having had an unfavourable symptom of any sort.

Several cases of extensive gangrene of the buttocks and back of the thighs, following a flogging, came for

treatment one man eventually died. I am glad to say that, in all the cases, the punishment had been inflicted by the troops of other nationalities than our own.

Gynecological cases were numerous but rarely submitted to examination. Amongst these who died, were cases of endometritis, chronic salpingitis and one ovarian cyst—the latter patient declined operation.

I had a long interview one day with a Chinese midwife, but, as she began the conversation by asserting that, during forty years' practice, she had never had a maternal death, her statements had to be accepted with certain reservation. A long scissors and a blunt hook are used by midwives in North China, but, apparently, no form of forceps. The lady that I conversed with insisted on the great importance of a midwife frequently washing her hands with soap and water. She had, too, some views on the subject of cephalic version, but I fancy that, as a rule, malpresentations and other serious obstetrical difficulties are left alone.

FIVE CASES OF SCURVY FROM NORTH CHINA

By E F GORDON TUCKER,

CAPTAIN, I M S

The following five cases are selected for consideration on account of their severity, from a group of several cases of this disease, who were removed to the Hospital Ship *Carthage* from North China in the beginning of April last. They are of interest, especially with reference to the causation of this disease among troops on Field Service. The causes of scurvy under such circumstances are briefly, according to the books, exposure, hardship, overcrowding and the absence from the food of certain organic acids and the salts of potassium. The cases are also of interest as demonstrating a point which is frequently overlooked, namely, that while a spongy and ulcerated condition of the gums is a constant symptom, it is nevertheless a distinctly late symptom, and that scurvy may have already obtained a hold over a group of men some considerable time before its presence can be detected at the "scurvy inspections" by means of an investigation of the condition of their gums.

CASE I—Sepoy N S, 13 years' service. Age 35

History of the case—He was in Shanghai Kwang for six months in all. He arrived there in good health in October when the weather was mild, the extreme cold weather commenced in November. About the end of the latter month the illness began with loss of appetite and debility. His duties had been in no sense severe. Vomiting, which was frequent, began in January, and he was admitted to hospital in February.

His rations were ample, and he obtained a due supply of vegetables, which he states were purchased locally. There is no history of hemorrhage from nose, mouth or bowel. Four years ago he had syphilis the secondary symptoms appear to have been extremely severe. On admission to hospital it was evidently considered that his anemia and debility were the results of this old trouble, for he was treated by mercurialunction. It is plain that there was no evidence of scurvy as far as the condition of the gums could show it. He states that his mouth became sore shortly before removal to the Hospital Ship.

Condition on examination—He is extremely anemic the skin is yellowish, cold and clammy and large beads of sweat stand out on the forehead. He is greatly emaciated, with sunken cheeks and hollow eyes, and the skin is drawn tense over the bony points of the pelvis and femur. Vomiting is incessant, and is increased by the taking of food or medicine. Saliva runs from the mouth, and he is constantly spitting. There is no cough and the lungs are clear. The heart sounds are normal but feeble. The spleen is not enlarged, and there is no tenderness of the belly.

The gums are swollen, purple, ulcerated in places, painful, and bleed on the slightest touch. The tongue is spotted on the tip and edges with purple patches. The breath is foul.

There are no ecchymoses or spots on the body, and no indurated masses can be felt in the muscles or over the tibia. There is considerable tenderness of the muscles of the calf.

Progress of the case—On one or two occasions after admission he had hemorrhage from the bowel, for which no local cause could be found. The temperature was generally normal or subnormal with an occasional irregular rise. He had several attacks of collapse and required careful watching. A bed sore threatened over the sacrum, which was checked by treatment. There was never any albumen in the urine. The condition of the mouth improved considerably, and his general condition had improved appreciably before arrival in India.

Condition of the blood—Red corpuscles pale, stained feebly and were very irregular in size and form. Many of them were of small size (2–3 m), and there were many larger than normal and of pyriform shape, not unlike the corpuscles in cases of idiopathic or pernicious anemia. On an average one normoblast was seen in each film. The average percentage of each variety of leucocyte from a considerable number of examinations was—

Polynuclear neutrophiles	25 %
Granular eosinophiles	10 "
Lymphocytes (large and small)	65 "

The daily total acidity of the urine—A specimen of recently passed urine was examined in each case, and the acidity estimated in grains of carbonate of soda, the amount of urine passed in the twenty-four hours was carefully collected and measured, and the total acidity calculated therefrom. A few of the examinations are noted—

	Amount	Spec Grav	Total Acidity
I	16 oz 6 dr	1012	23.7 grs
II	21 oz	1012	27.8 grs

Remarks—From the insidious onset of the illness the late inflammation and ulceration of the gums, the purpuric spots on the tongue, with the lymphocytosis and increased acidity of the urine, associated with the vomiting and muscular pains, I think that there can be no doubt that the primary condition was one of scurvy. If a case of scurvy in the early stages is treated as one of syphilis, it is only to be expected that where, as in scurvy, there is such a tendency to congestion and ulceration of mucous membranes generally, mercurial salivation will easily be set up.

CASE II—Sepoy S, 3 years' service. Age 21

History of the case—The illness began two months ago with loss of appetite and debility. Shortly before leaving North China, five weeks after the commencement of the illness, the gums became sore. When he first became ill purpuric spots came out over his body, and he had slight pain in the muscles of the calves.

Condition on examination—The condition of the patient is one of great debility and emaciation. The skin is covered on face, trunk and limbs with small hard raised pimples, the size of millet seeds, which are of dark purple colour. The gums are purple, swollen, and bleed easily, and there are ulcers, some the size of a split pea, at the bases of the incisor teeth and on the inner

aspect of the gums. Purpuric patches exist on the hard and soft palate and between the pillars of the fauces. The breath is foul. The muscles of the calf are very tender, reminding one of the conditions of a case of alcoholic peripheral neuritis, and the front of each tibia is covered by a long purpuric patch. The feet and shins are oedematous, and pit deeply on pressure. Heart and lungs are normal, and spleen and liver of normal size.

There are occasional rises of temperature to 101° or 102°, both morning and evening. His chief complaint, apart from great weakness, is of soreness of the mouth and pain in the back.

Progress of the case—The oedema of the lower extremities passed off, and the pains in the back and muscles diminished. Otherwise he made but little progress during the three weeks he was under observation.

Condition of the blood—Red corpuscles pale and somewhat irregular, but the irregularity not nearly so marked as in the previous case. A few pyriform cells present. On an average three normoblasts seen in each blood film. Average percentage of leucocytes—

Polynuclear neutrophiles	10.0% to 17%
" Mast Cells "	16.6% to nil
Granular eosinophiles	Nil
Large lymphocytes	20% to 27%
Small lymphocytes	50% to 55.2%

Acidity of the Urine

	Amount	Spec Grav	Total Acidity
I	24 oz 4 dr	1.008	35.0 grs
II	14 oz 1 dr	1.010	74.0 grs

CASE III—Sepoy M, 2 years' service. Age 23.

History of illness—He became ill early in January, and for nearly a month was in hospital suffering from fever and debility. He was discharged to duty, but after another month, that is at the end of February, he went back to hospital on account of weakness. In the beginning of March the gums became sore and swollen, and at the same time the feet became oedematous. While on duty, in addition to ordinary rations, he obtained sweet potatoes, onions and cucumbers regularly, which were purchased locally.

Present condition—He is very weak. The gums are swollen, with large ulcers at the bases of the incisor teeth. There are some purpuric spots on the borders of the tongue. There is marked oedema of the feet and shins, and indurations in the lower part of the peroneal muscles of both sides, and old purpuric spots on both legs. There is great pain, which is constant, over the metatarsal phalangeal joints, and he cannot bear the least pressure of the finger over the centre of the line of this articulation. There is slight tenderness of the calf muscles. Heart and lungs normal.

Progress of the case—The oedema disappeared rapidly. The gums improved considerably under local treatment. The joint and muscular pains disappeared, and he was able to walk a little with help before arrival in India.

Condition of the blood—The corpuscles were regular in size and shape. The percentage of lymphocytes varied from 50 per cent to 65 per cent.

Acidity of the Urine

	Amount	Spec. Grav	Total Acidity
I	42 oz 1 dr	1.011	80.4 grs
II	34 oz	1.009	87.1 grs

CASE IV—Sepoy R, 10 years' service. Age 40.

At the end of January when in Tientsin he was admitted to hospital for an attack of acute bronchitis and swelling of the feet. The gums became sore some time after his admission. He has suffered from cough off and on for a great number of years. At the commencement of this illness he had much pain in the calves of the legs.

Present condition—He is very feeble and has a troublesome cough, with the symptoms and physical

signs of chronic bronchitis. He appears also to be mentally affected, being hysterical and his speech slow and measured. The gums are swollen and ulcerated. There are many dark black patches on the dorsum of the tongue which gives that organ a very peculiar appearance. There are also several purpuric patches on the arms. There is slight tenderness of the calf muscles.

Progress of the case—The purpuric patches remained practically unchanged. He lost his cough on return to a warm climate and regained strength, and his mental condition also improved.

Condition of the blood—The red corpuscles were normal in size and shape but pale. The percentage of the various kinds of leucocytes was—

Polymorphonuclear Neutrophiles	30%
Granular Eosinophiles	15%
Lymphocytes (large and small)	55%

Acidity of Urine

	Amount	Spec Grav	Total Acidity
I	40 oz 4 dr	1.004	37.3 grs
II	48 oz 4 dr	1.004	52.4 grs

CASE V—*Phthisis with scurvy*. Sepoy B S, age 29. 9 years' service.

History of the case—His illness began in January with cough, which he thinks was caused by exposure while on duty during the cold nights, and with loss of appetite and debility. The gums did not become sore till shortly before leaving North China at the end of March.

Condition on admission—He is in a miserable condition of emaciation, with signs of consolidation of the right upper lobe, and of a cavity at the left apex. Coughs up a pint or more daily of mucular sputum, and cannot speak above a whisper. The gums are black and teeth loose, and the breath stinking. There are purpuric patches on the legs, and he has the curious tenderness of the metatarsal phalangeal joints, so frequent in my cases, and this adds greatly to his troubles. He has also great pain in the left knee joint. There is no effusion into it. At first there was incontinence of urine.

Progress of the case—He was apparently dying on admission, but with careful attention was landed alive in India. The condition of the mouth improved and the joint pains left him. At one time he appeared to have an acute effusion into the right pleura and I drew off a few ounces of blood stained serum. The blood was not examined.

Remarks

The first thing that struck one about these cases and several others not mentioned, was the fact that they were for three, six or eight weeks under skilled observation in hospital, and presented only obscure symptoms associated with great weakness. The variety of the diagnoses suggested in the early stages was remarkable. Anæmia, syphilitic anæmia, debility, malarial cachexia, syphilitic joint pains, were the commonest, and two cases with oedema of the feet and legs, debility and cardiac irritability suggested to one medical officer, a most careful observer, the possibility of beriberi. Nor do I know how a correct diagnosis could have been arrived at in any particular case. If, however, we are to pin our faith on the examination of the gums, and pronounce a group of men free from scurvy, by this means we shall be in danger of leaving them for a month or more in a condition under which scurvy is being generated.

among them. The next matter is the condition of the blood. I regret I had no hæmacytometer or coagulometer with me. It is maintained by Professor Wright* that the profound blood changes of scurvy are due to an "acid-intoxication" or "acid-æmia" associated with a greatly diminished alkalinity of the blood, and that this is due to a deficient injection of those salts which normally cause or promote the alkalinity of the blood. Cabot† states that "the usual qualitative changes of secondary anæmia are present in severe cases. hæmoglobin suffers as usual more than the count of red cells. Leucocytes are generally increased." He also states‡ that relative lymphocytosis is produced in scurvy, but he is apparently speaking of infantile scurvy. Dr Taylor§ says that the blood presents no specific character: it is like that of secondary anæmia, that is to say, that there is a slight diminution of red corpuscles with relatively greater diminution of hæmoglobin, irregularity in size and shape and the presence of normoblasts in the worst cases; that the leucocytes are variable, but often increased in number. These conditions of secondary anæmia were manifest in my cases. The corpuscles of several were polychromatophilic, taking a bluish tinge from the methylene blue. The worse the case, the more marked was the poikilocytosis, and the same remark applies to the presence of nucleated red cells. The most constant feature was the great preponderance of lymphocytes, both large and small which, as a rule, I estimated together, as with the presence of mononucleated leucocytes of intermediate size, I know of no reason for differentiating them into separate groups. Cabot gives the normal percentage of each variety of leucocyte as—

Polymorphonuclear neutrophiles	62—70%
Small lymphocytes	20—30%
Large "	4—8%
Eosinophiles	1—4%
" Mast Cells "	1%—1½%

In many examinations only polymorphonuclears and lymphocytes could be seen, the lymphocytosis being more marked in the more severe cases. It would appear that an examination of the blood would assist greatly in the matter of prognosis, a high percentage of lymphocytosis indicating that the illness will be a prolonged one. In the case of a native follower, who had been ill for a month with debility, tenderness and pain in the calves of the legs, with a few purpura spots on the legs and whose gums were blue, slightly swollen, but not ulcerated, the percentage of leucocytes was—

Polymorphonuclear neutrophiles	50 %
Small lymphocytes	41 %
Large "	9 %

* See *Indian Medical Gazette*, 1898, p 891—Ed. *J M G*
 † Clinical examination of the blood, 3rd Ed., 1900, p 325
 ‡ *Op cit*, p 115
 § Practice of Medicine, 5th Ed., 1898, p 763

This might have been an early case, or it might have been a slight attack, but it is seen that the polymorphonuclears are much more in evidence than in the severe cases. In the worst case (case 11) it will be seen that the polymorphonuclear leucocytes sometimes fell as low as 10 per cent. The hyperacidity of the urine is a remarkable feature, and is constant. The normal total daily acidity of the urine is said to be equivalent to 14 grains of carbonate of soda. Taylor states that the urine of scurvy contains more uric acid, but less all phosphates and is less acid. Von Jaksch||, however, states that the urine is apt to be intensely acid. The above cases would appear to support the latter statement, and if the phenomena of scurvy are caused by a too small ingestion or absorption of those salts which promote the alkalinity of the blood such a condition of the urine would be expected.

These cases were given citrate of potash gr xx, three times a day, with a little iron and nux vomica, plenty of milk and broth, occasional stimulants, and the juice of fresh limes, made into a pleasant drink with sugar and iced water, as much as the patient cared to take. Chlorate of potash (gr v to ̄i) was used frequently as a mouth wash, and sulphate of copper in solution (gr x to the ̄i) was painted or swabbed gently over the gums twice a day. It is unfortunately not true, as frequently stated, that very bad cases make rapid improvement under antiscorbutic remedies. The ultimate prognosis is good, but the illness will be a prolonged one. The mild cases, however, do recover rapidly.

The intense pain in the metatarsophalangeal joints occurred with curious frequency both in the mild and severe cases. It was not associated with any loss in the arch of the foot. A firm bandage over cotton-wool from the toes to the knee gave as much relief as anything.

With regard to early diagnosis the earliest symptoms would appear to be loss of appetite and lassitude, with muscular pain and tenderness, associated with anæmia. Such obscure symptoms appearing among a group of men should excite suspicions of scurvy, and antiscorbutic treatment given early would prevent many early cases from developing into such severe cases as I have described. A spongy condition of the gums should not be waited for. I do not know how it would be possible to make an absolute distinction between an early scurvy case and one of syphilitic anæmia. The urine is said to be alkaline in anæmia cases: it is intensely acid in scurvy. The muscular pains and tenderness would point to scurvy. Syphilitic anæmia is not a common thing to see in military hospitals. Scurvy occurs in groups.

Malarial cachexia presents difficulties. The enlargement of the liver and spleen distinguish

|| Clinical Diagnosis, Ed by J Cagney, 1897, p 250

malaria, apart from an examination of the blood for plasmodia. If the spleen is enlarged in scurvy it has not that hardness which characterizes malarial enlargement. The ulcers on the gums in "malarial scurvy" are small, situated at the bases of the incisor teeth, their length is transverse to the long axis of the tooth, and they are painless. The ulcer of true scurvy is seen on any aspect of the gums; it is rounded in shape, surrounded with a narrow but angry areola, and is painful.

Lastly, there is the time-honoured problem of the ætiology of scurvy. The causes usually invoked, namely, want of deficient clothing, exposure to hardships, do not obtain. The greatest attention was paid throughout the campaign to the matter of food-supply, especially with regard to the due supply of fresh vegetables. Undoubtedly the men were exposed to severe cold weather, but in no campaign has so much attention been paid to the warm clothing of all ranks. The winter clothing supplied was not only ample but generous.

The farmer's method of preserving their vegetables through the winter in North China appears to be this. Underground cellars are dug out, and lined with straw; the vegetables are packed between further layers of straw and stored in these chambers before the cold weather begins, and the whole well covered in. These chambers are opened in the cold weather, and their contents removed according to the demand in the market. If the vegetables were taken direct to the consumer from these storehouses, it might reasonably be assumed that they would get the organic salts of the vegetables in a normal condition; if, however, time is allowed to elapse during which the vegetables are exposed in shops and markets during the extreme cold weather, is it possible that the chemically complicated molecules of the organic acids undergo decomposition or become unstable?

Colonel Lane Nottel* says "the dried vegetables are also antiscorbutic, but the experience of some recent wars has not been so favourable to them as might have been anticipated. Do the citric and other acids in the dried vegetables decompose by heat or by keeping? We know that the citric acid in lemon juice gradually decomposes. It does not follow that it should be quite stable in the dried vegetables." For "dried" vegetable here I would substitute "frozen" and ask the same question. The suggestion therefore is that in a winter campaign in a severe climate it would be better that vegetables for the troops be bought daily from the storehouses themselves, and that vegetables such as potatoes, which cannot be procured in Northern China, should be sent packed in straw, and preserved on arrival from the extreme cold.

The next suggestion is that in a place where no fresh cows' milk can be obtained, the medical officer will do well to get as much milk as he can from the she-goats sent to the regiment for rations. A she-goat whose kids have been weaned ought to yield two pints of milk a day. I am informed that at least 75 per cent of goats supplied for rations will be she-goats. All the goats supplied for the hospital must by Regulations be she-goats. A judicious selection, and preservation for as long as possible from the knife, of the best milk producers among the she-goats will supply the medical officer with one of the best preventatives of scurvy he can get.

Lastly, one frequently comes across sailors who declare that they have been on sailing ships on which violent scurvy has broken out among the crew, in spite of the fact that lime juice had been served out to all hands in accordance with Board of Trade Regulations, and one meets with medical men who express disappointment at the occasional slow improvement of scurvy cases when placed on lime juice, which has the reputation of being the best remedy for the disease. Colonel Lane Nottel protests against the occasional dispute into which lime juice falls. He says that the value of the exhibition of tartaric and citric acids "is based on a very wide experience and should not be set aside by the statements of men who have seen only three or four cases of scurvy, which happen not to have been benefited by lemon juice. The progress of preventive medicine is checked by assertions drawn from a very limited experience, yet made with great confidence." Remembering this warning I would suggest that such apparent failures are due to the administration of lime juice, which has undergone some obscure decomposition by long keeping, and would advise the medical officer to endeavour to select the newest brand of lime juice he can obtain.

A CASE OF REMITTENT FEVER (1 DIAGNOSIS)

By J. O. HOLDICH, LEICESTER, M.D., B.S., B.Sc.
(LOND.), F.R.C.S. (LOND.),
LIEUT., I.M.S.

SERGEANT N—, of the Bikanir Imperial Service Infantry, aged thirty years, fourteen years' service, was admitted to D/58, Native Field Hospital, Tientsin, on February 5th, 1901, with the following history. He had suffered from "fever" during the night of February 3rd and came to the Regimental Hospital on the morning of February 4th, when his temperature was 99.4°, he was admitted, and in the evening his temperature rose to 101.6°, he was, therefore, transferred to the Field Hospital on February 5th. He had previously enjoyed good health and had not been in hospital since leaving India up to this date. He had no other symptom except fever.

On examination he was found to be a healthy looking Native, not obviously ill. Physical examination showed all the organs to be healthy and normal with the excep-

* Theory and Practice of Hygiene. Nottel and Firth, 1896, p. 279.

tion of a slight increase in the area of splenic dulness, the edge of the spleen however, could not be detected

Thinking the case to be probably of a malarial nature, I ordered calomel gr $\frac{1}{12}$ and quinine gr $\frac{xx}{xx}$ at once, the quinine to be repeated in similar dose for three days, to this treatment he seemed to respond, as the temperature fell. On the 9th February I reduced the dose to gr $\frac{x}{x}$ per diem. On the evenings of the 11th and 12th, however, the temperature rose again somewhat, and on the 13th it reached 101.2° , and after this it never fell below 99° in the morning, or 99.8° in the evening, and on the 17th it reached 102.4° . On the 21st, therefore (i.e., after sixteen days under quinine treatment), I stopped the quinine and ordered instead Liq Arsenicalis m $\frac{viii}{x}$ per diem, which on the 26th I increased to m $\frac{xii}{x}$ per diem. The fever, however, still continued its remittent course until the 27th, after which it gradually diminished. Knowing Lieutenant-Colonel Spencer, I.M.S., to be interested in these anomalous cases of fever, I asked him on February 28th to see the case with me, thus he kindly consented to do, and having examined the patient he asked me if I would try the treatment he recommended* based on the assumption that the case might be one of the nature of intestinal intoxication somewhat analogous to the one he has described in the *Indian Medical Gazette* of September 1900, to this I readily assented, but before trying the new treatment, we decided to stop all medicine for twenty four hours to see if the temperature would rise again.

Curiously enough from this date the fever never rose above 99.2° , and that after this he never took any medicine at all until he was invalided back to India for debility following on this lengthened fever, on March 25th, 1901, but up to this date he had no further rise of temperature.

I may add that there was never any typhoid state, gastric irritability, or rash throughout. The bowels were normal, there being neither diarrhoea nor constipation. The heart and lungs were normal. The liver and spleen were at no time palpable (though, as mentioned above, there was some slight increase in splenic dulness). He was kept on slop diet until several days after the cessation of the fever.

I much regret that, owing to being on field service, there was no microscope available with which to make a blood examination, as this would greatly have increased the interest of and utility in recording the case.

I must also advance the plea of field service to account for the many deficiencies and defects which I am aware of in the record of this case.

Through the kindness of Dr Bassenge, of the German Medical Staff in Tientsin, I am able to append a report of the examination of the patient's blood for Vidal's reaction, which was performed on March 4th, 1901, with, however, a negative result.

The special points I think in this case against the diagnosis of enteric are —

- (i)—Negative Vidal reaction
- (ii)—The fall of temperature to normal on the 10th day of the disease. I have never seen this happen in a genuine case of enteric fever, and I believe it rarely or never occurs.
- (iii)—Absence of eruption and typhoid stools.

Against the diagnosis of malarial fever is the fact that it did not respond to the treatment with quinine. I am quite aware that this by no means absolutely excludes the diagnosis, and in the absence of a thorough blood examination, it is impossible to express a positive opinion.

The question as to what the fever was really due to remains in my mind quite unsolved, but it seemed to me to be worth recording, especially in the light of Lieutenant Colonel D. B. Spencer's case alluded to above.

Dr Bassenge's report†

On 4th March 1901, at the request of Lieutenant-Colonel Spencer, I examined the blood of Sepoy N —, of the Bikanir Regiment, for Vidal's reaction. Colonel Spencer brought with him a solution consisting of one drop of the patient's blood in thirty drops of distilled water. A loop of a fresh bouillon cultivation of the typhoid bacillus was mixed in a hanging drop with a loop of the blood solution. I added to the blood solution in the Reagent glass thirty drops of the fresh bouillon cultivation of the typhoid bacillus. Neither microscopically nor macroscopically even after twenty four hours was any agglutination noticeable. The reaction was entirely negative.

(Sd) Dr BASSENGE,
OBERARZT,
German Medical Staff

GARRISON HOSPITAL }
LABORATORY, TIENTSIN }

* Soda Salicylat	grs 80
Sp Amm Arom	m 160
Sp Vin Gall	oz. 1
Sp Ether Nit	m 160
Aq ad	oz. 8
One ounce three times a day	

An enema of one pint of tepid water daily, containing Pot Permang gr $\frac{ii}{ii}$

AN OUTBREAK OF CATTLE PLAGUE IN CHINA

By S. ANDERSON, B.Sc., M.B.,
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$\frac{8}{96}$ Native Field Hospital, China Field Force

In collaboration with H. E. Keylock, M.R.C.V.S., I had an opportunity of studying the results of inoculation against cattle plague, the most fatal of all the bovine diseases.

It appears that this is a disease occurring sporadically in certain localities throughout China and in an epizootic form in certain years causes great havoc amongst cattle, being in great part disseminated in cotton cake and other feeding materials obtained from the interior.

On the present occasion, cattle plague was introduced in September last into Shanghai from Tanyang on the Grand Canal in three herds of cattle imported by the German military authorities. The first herd consisted of 100 cattle, of which twelve infected animals were shot and cremated, and the remaining 88 were slaughtered for food before they could develop the disease. The second herd consisted of 150 cattle of which 56 were cremated, 32 slaughtered for food, and those remaining were immunised with gall by Dr Haedicke and Schlie of the German Veterinary Service, the former of whom was good enough to furnish me with a summary of his results. The third herd numbered about 400, of which 198 infected animals were shot and cremated, and those remaining immunised with gall.

† Our readers will note the difference between the German and our Field Hospitals as regards equipment for bacteriological examinations. It is to be hoped that arrangements will be made for this sort of work in our future wars.—ED., I.M.G.

In addition some 82 cattle from neighbouring dairies became infected, and though the above herds from the beginning were surrounded by a police cordon, yet great difficulty was experienced in maintaining efficient isolation, it was amongst these dairies that our experiments were conducted

For the purpose of immunising animals from those already sick of the disease two materials are employed —

1. Immunisation with gall by Koch's Method
2. Defibrinated blood from infected animals

In each case the materials used were injected into the subcutaneous tissue in the jugular region of the neck.

The gall is obtained *post mortem* very shortly after death from the gall duct under strict aseptic precautions by incision through the duct and allowing the gall to run into carefully sterilised glass bottles protected from direct sunlight. The gall thus obtained must have the following qualifications—it must be of a clear green colour with a thin creamy, white foam on its surface, have no bad smell and be freely effluent, 10 cc centimetres are injected into the dewlap of uninfected animals. In from six to ten days the blood of inoculated animals exhibits antitoxic qualities and a temporary immunity is obtained.

To demonstrate the value of gall immunisation, two bullocks and a calf were injected with virulent cattle plague blood, the two bullocks having been previously immunised with gall. The animals were kept in a shed alongside others suffering from the disease. Within a fortnight the calf died of cattle plague, while the protected bullocks continued to remain perfectly well.

In our experiments the second method, i.e., defibrinated blood from infected animals was employed—two cows were used that had suffered from cattle plague eighteen months previously. Blood was obtained from the external jugular veins of the neck and by means of a cannula allowed to flow into a sterilised glass vessel, enveloped with water kept at blood heat.

The blood having been defibrinated 250 cc's were injected into mature animals, whilst calves received from 50 to 80 cc's in proportion to their age.

The results of inoculation during the outbreak are shown in the following table —

Dairy	No of animals present	INFECTED		NOT INFECTED	
		Recovered	Died	Number	Died
No					
I	15	7	1	1	1
II	7	7			
III	9	5	1	3*	
IV	21	17	1		
V	23	1	2		
VI	7	7			

* Said to have had Rinderpest previously

In all the dairies dealt with the disease had made itself manifest at the time of injection, but with varying degrees of virulence.

Some of the infected animals were already so virulently affected that the antitoxic serum had but little chance to overcome it, whilst others, though showing the same symptoms and presumably infected at the same time, showed the effects of the inoculation in inhibiting the disease.

These effects were marked local reaction at the seat of inoculation, with swelling and tenderness, lowering of the temperature, lessened diarrhoea and dysentery, and finally return of the appetite and milk, the bowels becoming firmer and the temperature normal.

On the first or second day after inoculation, if a sudden drop in the temperature was noted varying from

three to six degrees F., death invariably occurred, whilst if a more gradual fall varying from half to two degrees was present, the prognosis was decidedly hopeful and in any case temporary protection was only obtained where a definite amount of fever had extended over at least six days after the first inoculation.

Despite the fact that these inoculations are only of the value of preliminary experiments, the results are satisfactory, the outcome goes to show that unless there is a marked local reaction at the site of inoculation with a gradual fall in temperature and concomitant symptoms there is no certainty that an animal is protected.

Nevertheless it has been equally noted that some have become highly protected without showing any local reaction either from having had the disease previously, or developed sufficient immunity at the time. This was demonstrated in Dairy No 1 where three inoculated cows, though alongside diseased animals and presumably equally exposed to infection, not only showed no symptoms of the disease, but there was no local reaction, this fact was so evident that on questioning the dairyman he admitted that one animal previously had the disease, whilst the other two he stated never had been attacked.

A fair comparison with the gall method of inoculation cannot be made as (1) the blood used was of low antitoxic power, (2) the German authorities injected with gall before the animals could develop the disease, whereas we injected animals with defibrinated blood, who had already shown symptoms or were alongside infected animals.

On the whole, this method of inoculation gave good results and produced an immunity which for the time being tided an infected animal over the disease, and inhibited or prevented the disease infecting animals in the vicinity.

AMPUTATION THROUGH THE TROCHANTERS OF THE LOWER EXTREMITY IN A CHINESE COOLIE

By G S THOMSON,

Major, I M S,

54th N I Hospital

The patient was brought to the Field Hospital then encamped at the Temple of Heaven, Peking on the evening of the 1st October 1900, having sustained a severe injury to the left leg about 6 P.M. the same day. It appears that in rolling a very heavy teak log, in company with other workmen, he slipped and fell in front of the moving caulk of timber. The skin was torn off from the fold of the left groin to the heel, and hung like a folded bath towel behind the lower half of the thigh, knee-joint, and leg. The both lower bones had been smashed in their lower thirds, and the whole extremity was a quivering mass of muscle, yellow fat, shredded

tendons, sand dirt and gravel The patient was in a state of profound shock and collapse Pulse barely perceptible, skin cold and clammy, eyes sunken, breathing snatchy and gasping, and he was just conscious

It was entertained whether we could give an injection of cocaine $1\frac{1}{2}$ to 2 grains into the spinal column, and thus induce anaesthesia by the newest method, but we found the patient so weak and the danger of sitting him up to give the injection so imminent, that he was given chloroform instead and the limb amputated at once There was just sufficient skin attached to the posterior and inner aspects of the thigh to furnish a covering flap for the stump sketched out in imagination

Accordingly after preparations as for Furneaux Joidau's method, irrigatory cleansing, brandy, morphia, &c, a flap was made by incision down to the bone, the trochanter was then seen through, and whilst Captain W H Ogilvie, I M S, gallantly held the vessels, the tissues on the inside of the femur were severed at one swift stroke by excision, the knife being passed between the separated bone The precaution was taken to identify the femoral artery, so that pressure could be applied to it directly, and to ensure the vessel being divided low down in the stump where it was felt pulsating, and this also gave great hope for the vitality of the flaps and the avoidance of subsequent gangrene

Two vessels were tied, the skin met, almost as one meets the edges of the palms of one's hands, without tension and the patient revived with ether hypodermically and a large water enema containing 20 ounces of good brandy

Hot bottles were applied, and a plentiful supply of blankets and a sedative and restorative draught administered, and dressings and bandages adjusted, and the patient put to bed with two attendants in constant attendance on him On the 2nd October, the notes read, he is doing well, slept 5 hours, took soup and egg flip, and feels no pain or headache, urine had to be drawn off by rubber catheter Calomel grs iv, Pulv Jalapae co grs xxx given at 9 A M On the 3rd he had temperature 101.8°F , pulse 108, respirator 22, and slept well and had a clean tongue, and passed three motions consciously in the bed-pan On the 5th the stump was dressed No pus, very little discharge on the dry dressings noticeable One stitch rather taut was divided Temperature 100° , pulse 98, respirator 20

His mother came to see him on the 5th, and was given a subsistence allowance of food for three days Unfortunately for the best laid schemes of foreign devil surgeons when dealing with the Chinese, we had reckoned on her help to tide him over the reverse he had met with and towards recovery, but she had other notions The Chinese do object to going into the other world maimed, so this youth of 20 summers was given arsenic by

his mother secretly and died at 5-15 A M on the 7th October in spite of western surgical science, having temporarily rescued him from an otherwise certain death

Captain Moorehead and Captain Ogilvie, I M S, very ably assisted during the operation and afterwards The food left by the patient was given to one of two similar-sized dogs and they were both tied up together, and the one who had partaken of the suspected food succumbed that night The result of this case was very disappointing as it had excited a lot of interest, and was the biggest operation performed during the war in China at Pekin

A CASE OF BERI-BERI IN THE CHINA EXPEDITIONARY FORCE

By T H DELANY, M B.

CAPT, I M S

THE following case of beri-beri is, I think, sufficiently interesting to warrant its being published, and I desire to draw attention to the very early symptoms and signs of beri-beri which I had a unique opportunity of observing in this case

On the nights of the 6th, 7th and 8th January 1901, on returning to my tent after dinner, I heard the groaning noise usually made by a native in pain, and as the noise on each occasion was sufficient to prevent my sleeping I sent for and examined the man on the 9th January

He was a bhusti of this B (58 Native Field) Hospital of the China Expeditionary Force, and was about twenty years of age He stated that for the last nine nights he had suffered from pains in the legs and burning pains in the feet, and that for the last three nights the pains had been intolerable The pains began about sunset, that is about the time when he sat down after his day's work, and they continued most of the night so as to prevent his sleeping The pains were often accompanied by cramps in the backs of the legs and in the toes On feeling the muscles of the calf of one leg I was struck by the expression of pain exhibited by his face I found this tenderness was well shown in each calf by pressing the muscles forward on to the bones

I carefully examined the patellar reflexes, and found in the right leg that the first four taps on the ligamentary patella elicited no reflex, but that the fifth tap did cause a reflex which was small and delayed Subsequently only every second tap elicited a reflex, which was slight, and delayed a few seconds In the left leg every second tap caused a moderate reflex, the others resulting in none His temperature was 99° , pulse 96 I carefully examined for anaesthesia of the hands and feet and fronts of the tibiae, but found sensation almost normal

I noticed however on further examination that about the toes all sensations, viz, touch, pain and temperature were delayed frequently, and referred to the wrong place (allochiria) occasionally This was especially marked on the skin in front of the free ends of the toe nails I could not make up my mind whether there was any swelling of the legs or feet, but thought that at the lower end of the tibia a slight pitting occurred on prolonged pressure by the thumb

There was no other symptom or sign whatever, yet I felt justified in giving it as my opinion that the case was one of peripheral neuritis certainly, and beri beri probably

I will briefly state the further progress of the case. On the 15th January the reflexes were completely lost tenderness of the muscles still severe.

On the 24th January the fronts of the legs were slightly yet distinctly swollen, the skin was glossy looking, and the hollows over the crests of the tibiae obliterated. Touch pain and temperature sensations were distinctly delayed over the dorsal and plantar surfaces of the foot. The prick of a pin elicited a sensation of "vibration" rather than pain, and allochiria was marked over the same area. His temperature up to date has varied between 96.4 and 99°F, it was 98.6°F the same morning. Pulse soft, small, and 110 to the minute.

On the 12th February complete anaesthesia was well marked on the toes and inner sides of both feet. The area of delayed sensations and allochiria had, on the other hand, shifted further up so as to extend around the ankles and lower third of the legs.

The pulse was exceedingly ataxic and irregular, and at times broke into a series of beats that could scarcely be counted. The average number of beats to the minute were 140. The second sound of the heart at the base was accentuated. The first sound at the apex was roughened, and at times might be considered to be replaced by a murmur.

On the 1st March before I sent him to the Station Hospital, Kowloon, Hong Kong, he presented the picture of a well marked case of beri beri of the dry form. Anaesthesia of both legs extended to near the knee joints, and anaesthesia of both hands to just above the wrists. There was an elongated oval patch of anaesthesia on the abdomen extending from the pubes to above the umbilicus, and mostly to the right side of the middle line. The reflexes were absolutely lost.

The feet dropped, the gait was ataxic, and the muscles of the legs were wasted, flabby looking and tender to the grasp still. The hands had a weak grasp, and he had ataxia of the upper limbs.

The fronts of the legs were rounded, and a puffiness was visible in front of the ankle joints.

The temperature was 98°F, pulse 130 and soft. The area of cardiac dullness was increased to the left, the apex heart diffused, there was epigastric pulsation, and the heart sounds were as noted above.

The patient arrived in Hong-Kong on the 30th October 1900. There is no other case of beri-beri in this camp. He has always slept in a tent with three or more other followers. He often visited the Chinese bazar. There is much beri-beri in Hong-Kong. All the Chinese hospitals have many cases, in fact it is probably the commonest disease in the medical wards of those hospitals. I saw over one hundred cases in all stages and of all forms in the Tung Wah Hospital, Hong-Kong, last November. There were about nine other cases, all of which are of a mild type, among the fighting men and followers of the China Expeditionary Force, in the Station Hospital, Kowloon, Hong-Kong, where the Indian natives are treated.

I think the early signs and symptoms of this case are worthy of note, as it is just the sort of case that in the early stage is liable to be incorrectly diagnosed. I would point out the fallacy likely to arise by one making a hasty examination of such a case as this was on the 9th January, and concluding that there was no involvement of the sensory nerves simply because there was no anaesthesia.

I think this case shows, on the other hand, that delayed sensations and allochiria should always

be sought for where anaesthesia is expected and cannot be demonstrated. It would appear that delayed sensations and allochiria are indicative of the early, and anaesthesia of the later, stage of involvement of the sensory apparatus.

Again, although the reflexes could not be said to have entirely disappeared on the first examination of the patient, they were sufficiently diminished to enable one to foretell their probable early disappearance.

Lastly, the combination of pains in the muscles of the legs and tenderness of same points to the necessity of examining the reflexes and sensation, with a view to preventing one overlooking beri-beri.

BERI BERI ON THE R I M SURVEYING SHIPS INVESTIGATOR AND NANCOWRY

By A R S ANDERSON, B.A., M.B., Cantab.,
MAJOR, I.M.S.,
S U O, Port Blair

In the administration report of the Marine Survey of India for the official year 1894-95, I reported the occurrence of an outbreak of beri-beri on the R I M S *Investigator* and *Nancowry*, and described the measures found successful in combating the epidemic. In the present state of our knowledge of the cause of disease an account of the outbreak, fuller than that given in this official report, might prove interesting.

On October 17th, 1894, the *Investigator*, with about 120 people, and the *Nancowry* with about 26 people on board, left Bombay for Karachi, to survey the mouths of Indus.

On October 21st, one of the *Nancowry's* kankani quartermasters became affected with slight fever, reaching a little over 100°F, but subsiding in a few days to normal, oedema of the legs and feet, which subsequently spread to the abdominal wall, tenderness of the calves, great weakness of the lower extremities, and pallor. He was transferred on October 25th to the *Investigator*, but, as he showed no signs of recovering, he was discharged to his home on November 2nd.

On November 7th, one of the *Investigator's* stokers was similarly attacked but suffered very severely from ankle drop, was transferred to the Karachi hospital on the 17th of the month, and thence invalided, uncured, to his home on December 15th.

The next attack occurred on November 30th in the person of the carpenter's mate, a Chinaman, who slept in a cabin with the carpenter, on the deck above the place occupied by the stokers and lascars for sleeping. Thereafter one, two or three cases were almost daily reported till the middle of December, by which time no less than 19 of the crew of the *Investigator* had been seized with the disease.

Immediately on their discovery, a daily inspection parade of the crews was made to detect the sick and those affected with the disease were isolated under the fore-castle head and, so soon as possible, were despatched to the Karachi hospital, the *Nancowry* acting as the sick transport of the *Investigator*, when necessary.

On it becoming apparent, at the end of November, that an outbreak of beri-beri was imminent

ment, the water tanks were emptied and cleaned, and Karachi water taken in, but without any beneficial effect. After a few days use of this water, the tanks were again emptied, cleaned out thoroughly, and distilled water substituted, but no diminution in the number of cases occurred. While the water was being carefully looked to the fore-castle was thoroughly cleaned and repeatedly fumigated, the men's clothes and bedding daily hung up to air on the rigging, and, whenever possible, washed. Lime juice and an extra fresh meat ration, in addition to the ordinary ration, were daily issued, but these measures proved useless. Even the speedy separation of the sick from the healthy, insured by the daily inspection, seemed to cause no diminution in the number of cases.

Finally, as all other measures had failed, on December 14th, the remainder of our stock of Bombay rice, dal, flour, dried fish, sugar, and curry powder were hoisted overboard, the provision room was cleaned, a fresh stock, in place of the destroyed articles, obtained from Karachi, and the disease at once ceased. Before proceeding to Karachi to replenish our stores, on December 14th, two boat parties, of seven and eight men respectively, were detached and left in tents near Hajamro Point, at one of the mouths of the Indus. The men constituting the boat parties were specially selected as they were apparently free from all trace of beri-beri, and were supplied with distilled water and Bombay provisions. On these parties rejoining the ship, on December 18th and 19th, in one boat party, one man, in the other, two men were found to be suffering from beri-beri, while, during the same four days, not a single case had occurred on the ship, where there were six times the number of men that there were in the boat parties.

For the remainder of December, and the first ten days of January, the disease was absent, but on January 10th, four days after our return to Bombay, where we spent ten days, and it was quite possible for the men to contract the disease, two cases of beri-beri occurred, the patients were discharged to hospital, and there were thenceforward no further attacks for the four remaining months of the working season, which were spent in surveying Palk Straits.

On December 17th, the *Nuncowry*, on which there had been three more cases of beri-beri since the first case on October 21st, renewed her stock of provisions and was thereafter free from the disease.

The possible sources of contagion were direct infection from person to person, infection through the water or food, or infection of the ship. There was no evidence that the first method occurred, indeed the carpenter's mate slept for the first ten days of his illness, when his feet and legs were greatly swollen, and there was considerable loss of sensation and power in the legs, in the same very small cabin and

in a closely adjoining bunk to the carpenter, also a Chinaman like the mate. The carpenter, however, continued in good health throughout the working season. Prompt segregation of the sick seemed to exercise no beneficial influence in diminishing the number of attacks, nor was the greatest care in cleaning the men's bedding, clothes and sleeping accommodation of any avail.

That the water could not be blamed was conclusively proved by the occurrence of the disease when we were using Bombay, Karachi and distilled water. Indeed, while using the last, most of the cases occurred.

The occurrence of the disease in the detached boat parties, while in tents and when there were no cases on the ship renders infection of the locality unlikely as the cause of the complaint.

That the cause of the disease was contained in the food is rendered highly probable by the immediate cessation of cases on changing the food-supply in the ship, its continuance in the detached boat parties when using the suspected food, and its stoppage in them and the *Nuncowry* when the new supply of provisions was obtained.

Bad feeding, mouldy rice, heat, moisture, insanitary conditions, scurvy and latterly alcoholism, all supposed causes of beri-beri, were entirely absent in this epidemic. The food of the R I M lascars is excellent in quality and generous in quantity, as is amply proved by the great increase in weight which the crews of the surveying ships sustain, in spite of their frequently arduous duties. All their articles of food, before shipment, are passed by representatives from the warrant officers, the lascars and stokers, thus insuring a good quality of food. The weather in October at the beginning of the outbreak was hot and moist, but, at the middle of November, became so cold and dry that, coming as I did from the warm, damp climate of Calcutta in the rains, the skin of my back cracked very freely all over. The men showed no symptoms of scurvy either in their gums or subcutaneous tissues, and, as all the stokers and lascars are Mohamedans, alcoholism among them is quite unknown. Crowding of course there is as in all and specially surveying ships, where the crew must be numerous and the vessel small, but the same crowding existed in the last four, as in the first two months of the working season, and in March and April the moisture and heat in Palk Straits, where the sea temperature was often 86° F, were considerable. Yet only in the first two months of the voyage did the disease occur.

The following year, 1895-96, I was absent when the outbreak of beri-beri took place, but, as in the previous year, the first case occurred within a few days of leaving Bombay when one of the Goanese cooks showed the characteristic

symptoms of the disease, the following day a lascari was affected, and then a lull occurred till the 12th December, when a Goanese sweeper reported himself sick. Next day a stoker, and on the 17th and 18th two more stokers were taken ill. Thereafter the disease ceased.

In 1896-97 Captain Giant, I.M.S., reported four cases of beriberi on the *Investigator*, the first, a lascari on December 11th, the second the Assistant-Surgeon, Mr. C., on December 20th, both of these were left in hospital in Port Blair, and two other cases about a fortnight later in Rangoon.

In 1897-98 only two cases occurred on the *Investigator*, a stoker on November 30th, subsequently invalided, the second, a very mild case, a lascari was sent to the Mouline Hospital on December 27th, and returned to duty on January 8th cured.

In 1898-99 one case only occurred about fourteen days after leaving Bombay, when midway between Colombo and Rangoon, the patient was sent to the Rangoon Hospital and thence invalided.

Since then the ship has been free from the disease.

Cases of the disease have thus occurred in all classes of the crew, except the officers, whose food is obtained from a totally different source from that of the warrant officers, lascaris and stokers. It has affected the healthiest and the weakest, the old and the young, it has broken out in the cold, dry, windy weather of December on the Indus coast, also in the hot, moist, still atmosphere of the mouth of the Bay of Bengal in the beginning of November. The one feature common to all the outbreaks has been that they have occurred within two, and generally within one month of leaving Bombay and always while Bombay provisions were being used.

INFLUENZAL PNEUMONIA

By J. GARVIL, M.B., B.Sc.,

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Preliminary—It is an interesting question to consider which is the most important disease in India at the present time. The official mind looking at the matter from the political and financial side might say plague, the British Army Enteric Fever. The Native Army would perhaps consider pneumonia as of the first importance. The Jail Department would, no doubt, place dysentery and diarrhoea at the head of the list. And behind all there is the great question of malaria.

But looking at the matter from the point of view of the Civil Surgeon, who meets all classes and sees the effects of all ailments, I do not know but that influenzal pneumonia might not

be considered as the most important disease of the present time. It is very widespread, very common, a frequent cause of death, and when not fatal it saps for weeks the strength and energy of the people.

My object in this paper is to show first, what has been the effect of influenza, and especially influenzal pneumonia upon the country, and, secondly, to describe influenzal pneumonia, its various forms, morbid anatomy, and treatment.

Before entering upon the general knowledge and personal experience of this disease, it will be well to consider a few figures.

Influenza appeared in India, in epidemic form, in February 1890. Let us look at the results upon a known and well doctored population of about 300,000 persons in the army and jails, for whom we have accurate statistics. Consider also the age, health and surroundings of this class in forming an idea of the results of this disease.

INCIDENCE OF INFLUENZA

Pre Influenzal Period			Post Influenzal Period		
Year	Cases	Deaths	Year	Cases	Deaths
1882			1890	18,071	119
1883	36		1891	3,183	44
1884	40		1892	8,505	150
1885	26		1893	1,441	34
1886	17		1894	5,577	66
1887	7		1895	3,741	29
1888	14		1896	6,313	112
1889	45		1897	1,986	31
Total	185	Nil	Total	48,817	585

But this is not all. Note what has occurred under the heading of Pneumonia.

INCIDENCE OF PNEUMONIA

Pre Influenzal Period			Post Influenzal Period		
Year	Cases	Deaths	Year	Cases	Deaths
1882	3,325	906	1890	4,158	1119
1883	2,817	763	1891	3,410	854
1884	2,340	645	1892	3,894	1,031
1885	2,450	714	1893	3,425	799
1886	2,456	678	1894	3,265	859
1887	2,645	690	1895	4,345	1,007
1888	2,685	717	1896	4,339	927
1889	5,218	831	1897	3,399	827
Total	21,736	5,914	Total	30,335	7,423

I take an 8 year period only, because the years 1880-1881 do not form a true subject for contrast. Let it be merely stated that 5% of the men of the Bengal Army in the Khyber and Kurram died from respiratory diseases in the year 1880.

Not to burden the paper with further statistics, it will suffice further to merely state that, on the appearance of influenza in 1890, the deaths from bronchitis were doubled (77 to 151).

It thus appears that there has been a large increase both in sickness and mortality from this cause

Now turning from our population for whom we have accurate medical statistics, let us see what has been happening amongst the great mass of the population. What has been the effect of influenza upon them? Further on it will be seen that we are not so much in the dark as may be supposed. In the meantime whatever they may mean—

1 Let us write down the deaths from "Fever" in all India

Pre Influenzal Period		Post Influenzal Period	
	Deaths from "Fever" in India		Deaths from "Fever" in India
1880	2,744,322	1890	4,105,890
1881	3,175,293	1891	3,817,683
1882	3,125,366	1892	4,621,583
1883	2,879,659	1893	3,761,724
1884	3,306,255	1894	5,001,159
1885	3,396,239	1895	4,266,293
1886	3,470,754	1896	4,518,000
1887	3,581,623	1897	5,026,725
1888	3,371,487	1898	3,868,781
1889	3,524,763	1899	4,126,354
Total	32,575,791		43,112,222
Average	3,257,579		4,311,222

Let each one draw what conclusions he can from this, noting the results of the last Census and remembering the abnormal conditions of the last ten years. From the time of the appearance of influenza the average annual mortality from "fevers" has increased by nearly one million. Also, since then, the lowest mortality in any year has never touched the highest mortality of the previous ten years. One meets now and again with such a significant remark as follows in the Report of the Sanitary Commissioner with the Government of India in 1896: "The months of March, January and December were the months of greatest mortality, especially in March due to the inclusion in the statistics of diseases then prevalent, such as influenza, chest complaints, etc."

2 Again, if the monthly death-rate be considered, it will be seen that the curve has changed somewhat. The change is not striking, but still noteworthy. I have made out the curve for the North-West Provinces. The meaning of it seems to be that, perhaps, some 20,000 deaths are shifted from the autumnal rise to appear later on. The same thing is true for all India.

3 There is another way in which we may judge of the effects of influenzal pneumonia. If the Inspectors-General of Civil Hospitals' Returns, Table III, be consulted, it may there be seen year by year for what diseases the general population attend for relief. In these provinces there has been a proportionate increase in

diseases of the lungs and "other respiratory diseases."

4 One of the most significant facts is the result of *post-mortem* examinations conducted by order of the Police authorities. These include murder cases and suspicious sudden deaths, not all sudden deaths. In an analysis of the last 100 examinations, excluding new born infants, 18 of the deaths are found to be due to pneumonia. Twenty-two others are stated to have had definite pulmonary complications. These 22 do not include the congestion of the bases of the lungs so constantly noticed.

There has thus been marshalled a great mass of facts upon the prevalence of influenzal pneumonia, not only in the army and jails, but also amongst the general population. It seems to me that my readers may now think that there is something more to be said for my opening paragraph than they at first supposed. Let them take alone the question of *post-mortem* examinations and consider its significance, remembering the usual run of cases sent in by the Police for examination. They are mostly murders by violence and poison, suicide and sudden death. The influenzal pneumonia deaths are found amongst those two latter classes. Yet 18% of the deaths was due to this cause.

Returning now to the statistics given above there are, it seems, about 300 deaths annually from this cause in the 300,000 of a doctored population. Allow for a rise in population in the 1890 decade, and put down only 750,000 deaths as the annual increase over the 1880 decade, then judging from the figures for the doctored population, some 200,000 deaths annually occur in registered India from this cause. One feels that this is a very rough and mechanical setting forth of the truth of the matter. It however may arouse attention. I believe that it falls short of the truth. Influenza working in its own quiet way without terror is a devastator indeed.

I do not know what the experience of others may have been, but I first found the disease in 1891 on the North-West Frontier close to the Sindh Border. I have seen it right up that Frontier and in the hills on active service, in the western districts of the North West Provinces, and during the famine in Bundelkhand. Lastly, here it is as rife as ever in Oudh. A curious phenomenon I lately noticed on my return to military duty, again on the North West Frontier. Ten years ago lobar pneumonia was to be found throughout the winter continuously in every hospital. It is now displaced almost completely by this new form of pneumonia. Whether this be good or bad depends to my thinking upon the treatment accorded.

It is not until one has had a large experience of the disease and performed many *post-mortems* that to one's mind it forms an entity. At first I met the disease in a district (Rajampur, 1891) where there was little police work and a very small jail. There were a large number of cases, the deaths were important and not infrequent. I could only obtain one *post-mortem* examination. The symptoms were so various and the signs anomalous, that it was a relief to have one's diagnosis confirmed. Some cases died of the disease without a chest symptom others seemed merely to have congestion of the lungs,

A few seemed almost purely pleuritic, while in others bronchitic signs stood almost alone. The fever was not high, nor even continuous, but the heart and nervous system suffered severely. My conclusions were therefore not capable of much proof. Since then, in more favourable circumstances for observation, I have performed a large number of *post mortems*, and have no doubt when a case of the disease presents itself. Fortunately also a remedy was early discovered, which from the time it was begun to be used seldom failed. It might be called *specific* on this account and also because it is curative. It is not a treatment of symptoms, as the treatment of lobar pneumonia is. Further, in this disease nature is slow to act. What the treatment is, will appear in its proper place after a short description of the disease.

Morbid Anatomy

Lungs—The commonest condition, and typical, to find is one in which the one base is a red spongy mass intensely engorged, while the other is deeply congested. In the side most advanced the lung is somewhat consolidated and firm. There is still crepitation to be felt. The part floats in water though not buoyantly. The colour is intensely red to black, irregular areas appearing side by side.

The condition is a uniform one. Small, round scattered patches, as in broncho pneumonia of children, are not to be found. It does not pass through the stages of red and grey hepatization (nor clinically are the signs of these stages to be detected). The cut surface exudes a red watery fluid, and feels soft and like a soaked sponge. It is not granular. Bronchitis generally is present, and a greyish exudation may be expressed from the larger bronchi.

The same appearances but in a slighter form are found in the base of the other lung, or in another lobe of the same lung, or over the remaining part of the same lobe, when the whole lobe is not equally affected. Both bases may be equally affected. The upper lobes are commonly free from the affection.

The lungs are frequently bound down by dry general adhesion. If the condition be a fresh one, the exudation may be fluid and red or slaty. Again it may be solid and soft.

In the chronic variety the lung commonly shrinks and is firm. The connective tissue trabeculae become evident, thickened and contracted. The lung may however break down and become a collection of scattered abscesses. In one case I found the cause of death to be hæmorrhage due to the rapid softening and disintegration of the lung tissue.

Heart—In colour it is purple. The coronary veins are engorged. In the sulcus along with the coronary vessels there is a whitish yellow gelatinous material. On the prominent part of the ventricle anteriorly or posteriorly a white "plaque" or plate is found. The pericardium is slightly thickened with a dull surface. A small quantity of fluid is found in the sac. On opening the heart clots are found, yellow and soft, organised. They extend in the direction of the blood stream into the pulmonary artery and aorta. They are more common upon the right side, and may be pulled out from the artery several inches in length. Around the yellow clot there is found in varying amount ordinary clot. They start from and are attached to the right ventricle, or sinus venosus of the right auricle.

This is not an invariable condition, but it is frequent. It is typical in that when present one would say that it is the heart of influenzal pneumonia. Other heart conditions may be found with or without some of the above characters. For instance the heart may be dilated with thin walls and the muscle substance of a peculiar ruddy brown colour.

The spleen sometime enlarges, also the liver. Peritonitis has been found. Congestion of the kidneys, brain and meninges is not uncommon.

Symptoms and Physical Signs—Influenzal pneumonia is a disease very different from other pneumonias. It does not agree with the descriptions of either lobar or lobular pneumonia. This is also apparent in the morbid anatomy.

In influenzal pneumonia, at first at any rate, there is seldom the acute pain, sudden distress, and hacking cough. These symptoms do present themselves, but they are generally mild in character, and the whole illness may be passed through without one appearing. Sometimes without one symptom of a chest complaint, one has discovered abundant signs of the disease. The sputum is uncoloured and bronchitic in character. The temperature is not commonly high, nor has it such a fairly average duration as in lobar pneumonia. It does not disappear by crisis.

The disease is met with in such varied forms that the best idea of it can be gained by a description of the several types of the disease.

Slight—During an attack of influenza the patient has a slight cough and complains of uneasiness in the side. There is no sputum. The fever has not increased but the pulse is more frequent. On examination of the chest the intercostal spaces on one side posteriorly and latterly are slightly indrawn with each inspiration. The percussion note over this area is somewhat dull. There are a few rales and expiration is prolonged, but the respiratory murmur is not very rough. With appropriate treatment in three or four days, all signs and symptoms disappear and convalescence is only somewhat prolonged.

Severe—This form is not infrequent, and when seen is usually found during an epidemic of influenza. The description of a case of lobar pneumonia in the *first stage* is generally applicable. There is no need therefore to detail the fever with quick pulse, rapid respiration, cough and pain in the side. It is to be noted, however, that the sputum is never rusty, and the fine crepitation so well known in this stage of lobar pneumonia is not present. The crepitations that are present and may be from within the alveoli are non-consonating. Bronchitis rales are usual, and pleuritic friction common.

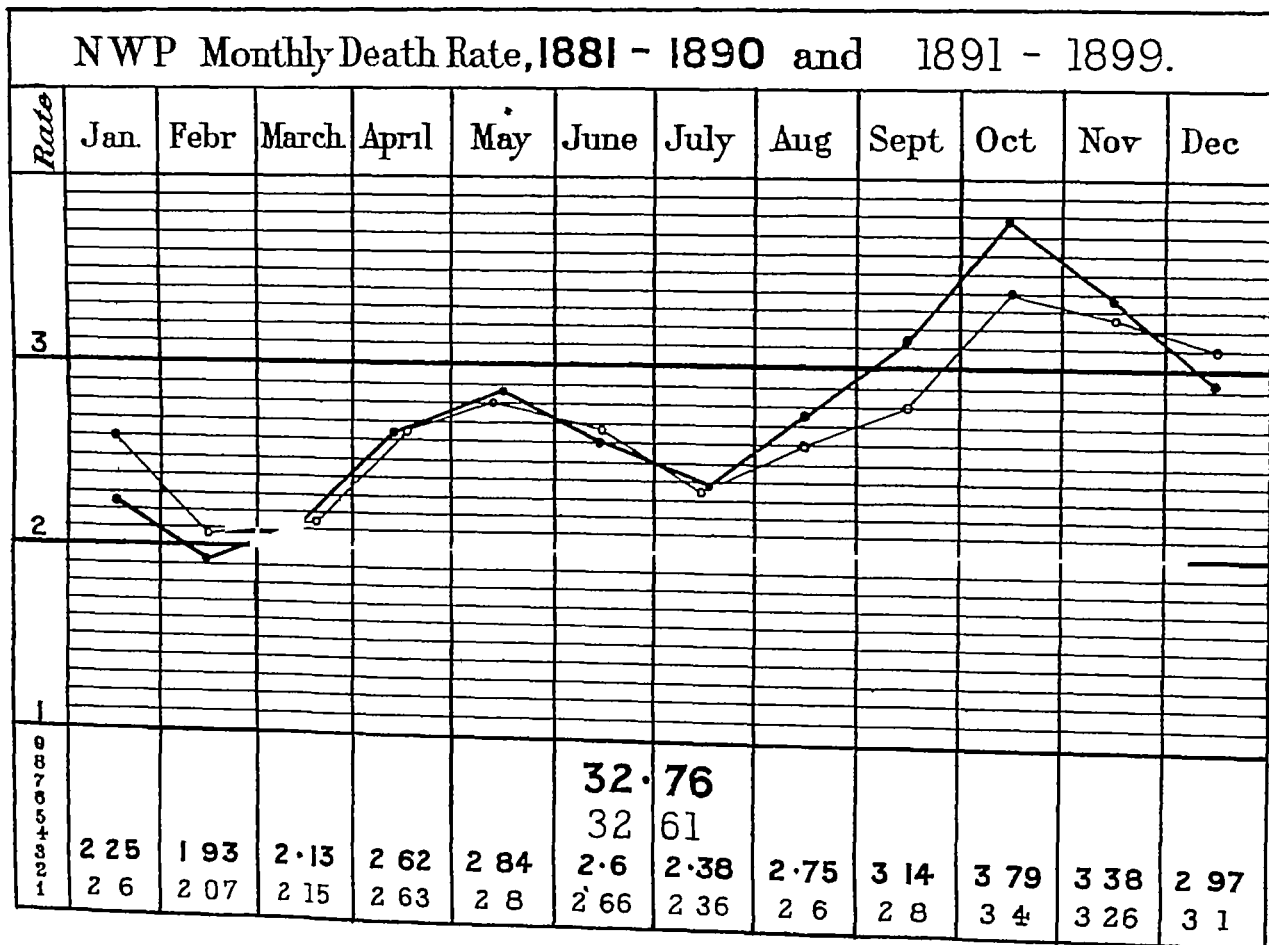
Generally this form yields to the specific treatment mentioned below in five or six days, the temperature gradually falling with morning remissions. In some cases the course is prolonged to a month and may then be fatal. Again the temperature may fall and recovery seem assured when a recurring attack develops.

Fulminating type—There are numerous sudden deaths from this disease from various causes, but the above term cannot fairly be applied to all. The two following cases of this type abridged from the case book here will best illustrate this form. I—O L, healthy, athletic man, was in perfect health on 1st March. At midday he complained of fever, which was found to be 102°, and at evening 105° there was no pain nor distress. He vomited once at night, but made no complaint to neighbours of being seriously ill. At morning visit he was found by the Hospital Assistant to be collapsed and died at 8 A.M. *Post mortem*. Both lungs were intensely engorged with black fluid blood throughout, except a small portion of front of right lung, as well as smaller portion of left lung. Heart, normal. Old splenitis. II—G, fairly nourished small man, was in hospital for a trivial wound. He looked well in the morning and made no complaint. Took his midday meal. Shortly afterwards he became alarmingly ill, collapsed, and died at 4 P.M. *Post mortem*. Very recent red hepatization of the lungs, with deep congestion of all parts except the apices. Condition approaching pulmonary apoplexy in places. Heart, spleen, and stomach healthy.

Chronic Relapsing—This is a common type in jails, and may also be seen among the in-patients at the dispensaries. Such a case has probably been a member of the Infirm Jail Gang, and noted as having entered jail in poor health. These people are anæmic, thin, puffily looking about the face, their ribs stand out,

INFLUENZAL PNEUMONIA

By J GARVIE, M B , B SC , MAJOR, I M S



There is a peculiar juicy, yellow look about the physiognomy which is almost pathognomonic. Such men pass through several attacks, the relapse occurring after a chill or with an attack of diarrhoea. He has low fever, quickened respiration, some pain in the side, slight cough with sputum whose character depends upon whether fresh bronchitis be superadded. He rapidly loses the weight he has been gaining. On examination one base is found slightly dull and the other may be hyper resonant from contraction of the lung. On aspirating the chest in such a case I have felt the lung firm, and attached posteriorly, while the trocar seemed to move freely in a vacuum.

Adynamic—This form appears in men of the former stamp and is apt to be overlooked, as he has no fever and generally no complaint leading one to examine his chest. The patient is generally seen sitting in bed, listless and dull with sleepy eyes, uncomplaining and unnoticed. There is no appetite, and he has daily to be forced to eat a little. His hands are cold. But the marked feature is the slow pulse and slow respiration. On examination the chronic lung condition will be discovered.

Treatment—At the very beginning of my acquaintance with the disease, I had a series of fatal cases. The ailment proved most intractable, and the ordinary remedies, which are a mere treatment of symptoms, seemed unavailing. In these cases the temperature was not usually high, and there were few or no symptoms of lung trouble. One therefore felt a distressing sense of helplessness.

I was led to try an internal antiseptic, which would counteract some poison of a septic nature. Since 1892 carbolic acid has proved to be a remedy which can be confidently recommended. It has such an effect that it may be considered a specific. At first I combined it with iodine, but for some years I have preferred the use of small doses of quinine (1—2 grs). At present I use a mixture dissolving the carbolic acid in chloroform and add the quinine previously dissolved in double the ordinary amount of acid.

All other drugs in use are not to be neglected. The ammonia cough mixtures are constantly required. Strychnia as a respiratory stimulant and especially digitalis are most useful. Belladonna, turpentine, etc., etc., have their uses in circumstances that need not be detailed.

What I would wish to insist upon is that while these remedies meet and counteract various tendencies and symptoms, carbolic itself is curative in a sense that these are not.

Terminations—Recovery. The slighter forms are speedily recovered from with no damage to the lungs but the severer, if they last any time, generally leave the lungs with permanent defects. Months afterwards there may thus be found posteriorly some dulness in the note and prolongation of expiration. Or again evidence that the lung has contracted.

Death may occur in several ways.

- (a) First with slight pneumonia but severe influenza.
- (b) In the severe forms and suddenly as has been narrated under the fulminant type. Here the death seems to occur from acute congestion of the lungs. Again, death occurs after a prolonged severe attack, and the immediate cause is exhaustion from the disease *per se*.
- (c) The most striking termination is through heart failure, and through blood clot in the heart. The end in such cases is not sudden. Many days beforehand it may be seen approaching in the anæmic, yellow, puffy face, the œdematous limbs and the feeble heart sounds. In such cases it is difficult to detect a murmur. The pulse may be remarkably slow.
- (d) Superadded to a latent tubercle of the lung it is often fatal.
- (e) From abscess formation as in lobar pneumonia.
- (f) From hæmorrhage into the lung, and pleura as I have seen in one case.

THE RATIONAL AND SAFE TREATMENT OF OBESITY

BY H P JERVIS,

LIEUT. COL., I.M.S.,

Dombay

WHAT is obesity? It is generally defined as the over-accumulation of adipose tissue, under the integuments and around the viscera, in such amount as to constitute a "disease", the term "Corpulency" being retained, for those cases when this tissue is not sufficiently in excess to interfere with the functions of the muscles and viscera.

It seems curious to me (who have devoted much time and attention to this "disease") how few medical men realize the gravity of this condition, and sufferers are often put off with the remark "I would advise you to let well alone". This is why there are so many quack nostrums for this affection, as the stout patients themselves do not feel "well", nor are they "well", as this state is just as much a "disease" as any other, and also leads to, aggravates, and interferes with the treatment of other diseases, as is very ably shown in the article on it in Quain's Dictionary of Medicine. It is with a view of remedying this neglect to recognize and treat a serious affection, that I write this article to direct attention to a treatment for it, which I have been using with great success since 1897.

It is pretty generally thought, and taught, that obesity, being "a perversion of nutrition," could not be cured, but I will try to show that this is an error, and that this condition, or disease (for I maintain that obesity is a "disease," and not merely a diathesis) can be cured, like most other diseases. But, to treat a disease properly and scientifically, one must discover, and treat its cause—the *fons et origo mali*, otherwise the treatment must be but empirical.

I venture to lay claim, to having discovered the cause of obesity, and, consequently, to treating it on a sound and scientific basis.

Hitherto the only sound (?) treatment of this condition has been a dietetic one, but, while admitting that certain articles of diet will induce this condition, in some persons only however (as others can eat and drink anything without putting on an ounce of "flesh"), and abstention from them relieve it temporarily, I maintain that this cannot, and does not, cure the disease, as was strikingly shown, in the case of Arthur Oxton—the notorious Tichborne "claimant". He, at the time of his conviction in February 1874, weighed 25 stone. At the end of 1884 (i.e., after ten years and eight months of imprisonment and prison dietary), he scaled 10st and 6lbs, but his weight soon began to increase again, and, at the time of his death, in 1898, he again weighed 18 stone.

My theory of the cause of obesity is, that it is due to a persistence of the function (at any rate) of the thymus gland. It will have been remarked that most healthy children are fat and plump, up to a certain age—two years—*i.e.*, as long as their thymus glands retain their full activity, but this gland, being essentially one of early infant life, begins to shrivel and lose its activity after two years of age. Further, it is a fact, commonly observed that obesity is a frequent concomitant of old age—"second childhood," and this, I argue, is due to a resumption of the suspended functions of the thymus gland. It is, also, frequently noticed, that some persons will get stout on very meagre fare, while others can eat and drink anything without putting on an ounce of "flesh." This, I maintain, is due to the thymus gland being active in the former, and dormant (as it *ought* to be in adults) in the latter.

Having discovered the cause of the disease, it was a comparatively easy task to find a remedy. The observations of Owen, McNamara, and others having shown that there is, without doubt, an antagonism in function between the thymus and thyroid glands, and the experiments of Kauffmann, Macalister, &c, having established the fact that the *internal administration* of these and other glands has a therapeutic effect, I was led to administer the *thyroid* gland in obesity. My trials and experiences of different preparations of this gland are detailed in a short article in the *British Medical Journal* of the 22nd October 1897, and, since then I have continued the use of the "Tabloids" (B W & Co's) of the *colloid* matter of this gland, with unfailing success in several "cases"—of three of which (not, in any way, "selected"), I append brief details, and which, I consider, are sufficient to prove the *efficacy* of the treatment, which I have shown to be based on a sound physiological and pathological basis.

The *safety* of the treatment is evidenced by the fact of all my stout patients (except one, who died of abscess of the liver) being alive and well, and one and all of them having remarked, while under treatment, that they experienced no ill-effects whatever while taking the remedy, and that, but for the fact of their getting thinner, they would not have known that they were taking anything.

Details of the Treatment—As patients vary widely in their susceptibility to the action of the thyroid gland preparations, it is necessary (so to speak) to "feel one's way" with this remedy, and I generally begin by ordering *only one* of the *colloid* substance half grain "Tabloids" (B W & Co's) to be taken *immediately after* lunch, and another immediately after dinner, and I always caution the patient to be careful to remain seated, and not exert her or himself, for half an hour after taking a "Tabloid." This precaution is enjoined, as the remedy *sometimes* causes palpitation of the heart, and it may be relaxed somewhat—although it is always as well not to take any violent exercise soon after a dose, if it be found that it does not have this effect,

I also caution the patient not to take more than two "Tabloids," in the 24 hours, without my express directions, and to stop the remedy at once (and communicate with me, before taking it again), if she or he have "a feeling of tightness round the chest, headache, lassitude, and weakness."

I have found this dose generally sufficient to effect a reduction of 2 to 3 lbs a week in weight, a more rapid reduction than which I do not recommend, as it is generally "felt" by the patient, who then has a "tired feeling." But (as I said before) persons vary greatly in their susceptibility to this remedy, and I have had to administer as many as five tabloids (one after breakfast, two after lunch, and two after dinner), a day, to effect this amount of loss of weight, but *without any ill effect*.

As regards diet, the great feature of this treatment is that it requires *no alteration whatever in the ordinary diet*, and I never place the slightest restriction on any article of food or drink.

CASE I—Mrs B, aged 35, height 5ft 4in, began treatment on the 17th December 1897, when her weight was 10st 7lbs and her abdominal girth 36 inches. On the 28th January 1898 (*i.e.*, after six weeks' treatment), she weighed 10st 1½lb, and her abdominal girth had decreased to 29½ inches, so that she had lost 5½lbs in weight, and 6½ inches in girth, in six weeks. This lady had further reduced her weight to 9st 5lbs by the 25th February 1898, and, when I heard from her, on her departure for England—on the 18th March 1898—she had not begun to increase in weight again.

CASE II—Major W began treatment, on the 25th January 1898, when his weight was 15st 1½lbs and his abdominal girth 42 inches. On the 10th March 1898 (*i.e.*, after six weeks' treatment) his weight had decreased to 14st 4½lbs, and his girth to 39 inches, so that he had lost 10½lbs in weight, and 3 inches in girth, in 6 weeks.

CASE III—Mrs R, aged 45, height 5ft 4½in, began treatment on the 22nd February 1898, her weight then being 10st 12lbs, and her abdominal girth 46 inches. On the 12th April 1898 (*i.e.*, after seven weeks' treatment) her weight had decreased to 9st 12lbs, and her girth to 38 inches, so that she had lost 1 stone in weight, and 8 inches in girth, in 7 weeks. When I last heard from this lady, on the 4th November 1898, she had further reduced her weight to 9st 11lb, and her girth to 36 inches, so that she had lost 1st 11lbs in weight, and 10 inches in girth, by then, and was naturally well satisfied with the result.

These cases are (as I said before) not, in any way, selected, and these results were attained *without any alteration whatever in the ordinary diet*.

SOME OPHTHALMIC COMPLICATIONS OF PLAGUE*

By F. P. MAYNARD, M.B., F.R.C.S., ENG
MAJOR, I.M.S.,

Civil Surgeon of Patna, and Superintendent of the
Temple Medical School

ALL writers on plague describe the injected eyes as characteristic of the plague *facies*. The plague-stricken, and sometimes half-drunken, look which enables one often to recognise at a glance patients attacked by the disease, is in part due to this injection.

* Being a paper read at the Annual Meeting of the British Medical Association at Cheltenham in August 1901.

Mr Canthie, in his article in the *Practitioner*, Plague Number, says plague patients sometimes get inflammation in the eye and loss of vision from changes probably beginning in the choroid. With this exception I have come across no description of the condition upon which this injection depends or of the serious results to which it may lead.

During the recent severe epidemic of plague in Patna, I came across twelve cases in which there were ophthalmic complications. The notes are briefly recorded below. In all the attacks were severe, seven had buboes that suppurated, and in the majority there was delirium or insensibility. The lesions met with were not however the result of lagophthalmus. They were rather the results of uveitis and opacity of media, apparently from interference with the nutrition of the eye.

Of the twelve patients examined six recovered with one eye sound. In the remaining eighteen eyes the following lesions were noted. *Cornea*—hazy in four, opaque in two, and sloughed in four. *Iris*—signs of uveitis varying from a few dots of pigment on the anterior capsule to occlusion of pupillæ in twelve cases, and in three others the iris was prolapsed. *Sclera*—scleral staphyloma was met with twice. In both cases it was ciliary, and in each the dark projection was separated from the corneal margin by a strip of healthy-looking sclerotic. In one the uveitis was evidently drawn up with the staphyloma, and its upper portion was not visible through the clear cornea. *Lens*—was hazy in seven eyes, and quite opaque in five. The *media* were hazy in six. The *fundus* was normal in three, showed a hæmorrhage in one, and the appearance of a limited refinitis pigmentosa in one other. The *tension* was diminished in twelve cases, normal in the rest. *Vision*—nil in five, pl only in eight, and fairly good in five. The enumeration of these lesions shows the serious nature of the eye complications of plague when they occur. The most remarkable feature in plague *post-mortem* examinations is the extensive extravasations of blood that are met with throughout the body. I was prepared, and on the look-out for similar hæmorrhages in the eye. In only one was one found. The media are so hazy usually, however, that more examinations of the fundus in various stages of the disease are required before dismissing this as a possible explanation of the destructive changes met with. The rapid development of scleral ectasie and the usual diminution of tension are rather remarkable. Scleral ectasie usually develop slowly and oftenest from increased tension. In these eyes the sclerotic must have become less resistant to normal or even reduced pressure.

Treatment—Was of no avail because perhaps started too late, in all except one case where iodide of potassium and nux vomica internally,

atropine, and blisters on the temples, seemed to have a good effect. The tension rose to normal and the sight improved. It was the good result after treatment in this case that caused several of the others to consult me.

BRIEF NOTES OF THE 12 CASES

(1) Male, aged 40, seen 12th January 1901, with ripe left cataract and otherwise healthy eyes. Attacked by plague four days later and nearly died, delirium. Seen again 11th February 1901, with superficial layers of left cornea sloughed and iris prolapsed. T 1, v nil. Bubo on left side of neck subsiding. R E normal. In this case did the cataract render the eye more liable to destruction or had the bubo anything to do with it by pressure on the sympathetic?

(2) Male, four years old, seen 15th February 1901. Plague, 24 days ago. Now has suppurating buboes left side of neck and right elbow. On 4th day left eye inflamed. Now the eye is soft. T 1. Has uveitis, pupil irregular with posterior synechiae, anterior capsule of lens dotted with pigment and rather opaque. Ciliary injection. Eye sunk deeper in orbit than right and looks smaller. Patient is thin. V can just distinguish the lamp. Fundus not visible.

(3) Female, 20 years, seen 17th February 1901. Plague four weeks ago, septicæmic, no buboes, high fever, delirium five days. V affected tenth day. Has a parenchymatous goitre. No pain or tenderness, but photophobia in left and lachrymation in both eyes. R E, V = p 1, T 2, pupil small, irregular, not reacting, no fundus reflex, media hazy, conjunctiva and sclerotic injected. L E, V = counts fingers, T-2, eye same as R E, but not quite so bad. Fundus reflex present, but no details visible. Treated by blisters on temples, atropine, boric lotion and iodide of potash and nux vomica internally. Seen again three weeks later much improved. L E pupil dilated and round but displaced upwards, iritic pigment dotted in a small circle on anterior capsule. T n, a c deep. Still some circumcorneal injection and interior ciliary veins enlarged. V, good. R E ditto, but injection deeper and T 1. Pupil not quite round. Sees near but not distant objects she says. By direct ophthalmoscopic examination R E lens very hazy, reflex bad, and no details made out. L E lens hazy, fundus not clear, but disc seen and a hæmorrhage, recent, below and internal to the disc, the edges of which were ill defined.

(4) Female, 20 years, seen 12th March 1901. Plague thirteen days ago, suppurating bubo left side of neck. Bubo began sixth day, and same day right eye inflamed. R E injected deeply, but anterior ciliary veins not visible. T 1, cornea and lens both hazy. Pupil oval under atropin. Seen again 11th April 1901, same state. V = counted fingers at six metres. Fundus not clear, iris adherent, left fundus normal.

(5) Female, 35, seen 23rd March 1901. Plague twenty-six days ago, right submaxillary bubo, delirium, eyes bad from beginning. R E injected deeply round cornea which is clear, lymph in a c. V = p 1, T n uveitis. L E less injected than right, cornea hazy, has sloughed and iris prolapsed below. T-1, v nil. Some tenderness, is very weak. Not improved by treatment.

(6) Male, 40, inoculated prisoner in jail, had severe attack, high fever and delirium, inguinal bubo. Moderate injection in both eyes. Saw badly after with left and it squinted outwards. Under atropine on 6th April 1901 (twenty days after attack) R E, T n, fundus n, media rather hazy. L E T 2, media hazy, especially the lens and refraction astigmatic, disc normal. To its outer side the retina appeared just like retinitis pigmentosa, hæmorrhage, vision indifferent.

(7) Male, 35, plague two months ago, suppurating right femoral bubo, delirium and high fever, seen 3rd April 1901. R E T-2, cornea sloughed and iris prolapsed. V = nil. L E T-2, cornea ulcerated above

fairly clear below, conjunctiva deeply injected V = fair, p 1 Slightly improved by treatment

(8) Male, 18, seen 15th April 1901 Plague three months ago, suppurating buboes both sides neck and right groin Insensible one day Eyes were injected but left more, and it remained closed On recovery eye was white (leukoma), and after being treated for this says the staphyloma developed When seen L E has large mulberry like scleral staphyloma above separated from corneal margin by about 2 mm of healthy looking sclera T-1, cornea slightly hazy, striae in lens Fundus not seen properly in consequence, though reflex good Iris drawn up and not to be seen at all at upper part (has been drawn into staphyloma?), a c deep Some adhesions of iris to anterior capsule Eye tender, not injected Some lachrymation V = counts fingers at six metres R E normal in every way Not altered by treatment.

(9) Male, 13, seen 10th May 1901 Plague four months ago, right inguinal and left submaxillary glands suppurated was insensible Had photophobia Left eye found destroyed on recovery, and sight dim in right eye This eye has gradually got worse without pain L E atrophied R E opacity of lower and outer quadrant of cornea, deep injection below and to outer side a c shallow, pupil occluded and lens extracapsular Iris tiny sclerals, staphyloma above and two dots of pigment also showing through sclera near it T n V = p 1 only Operated upon to try and make a pupil, the a c as found almost obliterated No improvement followed

(10) Male, 55, seen May 1901 Plague a year ago, submaxillary and inguinal buboes suppurated, unconscious L E blind on recovery R E became slowly when seen R E T 1, a c deep, old iritis, dense adhesions to lens which was white opaque and moved a little V = p 1 good L E T 1, same as right but no p 1 even

(11) Male, 60, plague some months ago Had dense white leukoma over whole cornea V = p 1

(12) Male, 37, seen 28th May 1901 Plague three months ago, inguinal bubo suppurated unconscious, eyes became red and sight dim a week after attack, and remained red for a short time after When seen both showed dots of pigment over anterior capsule (old adhesions), media hazy Disc and fundus normal V good, and T n in both eyes

ORIENTAL SORE

By HENRY SMITH, M D, M Ch,

Civil Surgeon, Jullundur

This sore is known by different names in the Punjab and beyond the Indus, *eg*, Polli boil, Lahore sore, Multan sore, in the Peshawar side of the frontier as Frontier sore, and in Sindh and Baluchistan as a Sindh sore In the Cis Indus Punjab, it is a well recognised and not uncommon sore but its greatest prevalence is beyond the Indus In Sindh and in Baluchistan it is exceedingly common During the two and a quarter years while I was medical officer of the Mushkaf Bolan State Railway construction, I had extensive experience in dealing with these sores At the different dispensaries on that construction railway they were the chief out door affliction and were to be seen in numbers daily

Causation—That they are a parasitic skin disease—they never extend beyond the depth of the true skin—I have no doubt That the parasite gains entrance from the earth or water or from both there can be no doubt Their origin is by no means necessarily connected with scratches or abrasions of the skin Thus sites are oftenest on the distal parts of the limbs, especially the ankles and wrists and on the face, but they are so frequently found on other parts of the body that we may say that they have no particular site In observing

these sores a fact forced itself on me, and it is a fact which I have not seen pointed out by any one, *viz*, that those who had had one attack of these sores did not get another attack—in short, that one attack seems to render the patient immune against future attacks On the Mushkaf Bolan State Railway construction the labour was all imported, and so marked was this fact as regards susceptibility that it could not escape observation The newly imported labour almost invariably got attacked after arrival The labour mostly disappeared in the hot weather, so hot was it, and was renewed on the approach of the succeeding cold weather, whereas the labour which remained a considerable time in this pass was very seldom attacked They had been attacked in their early period in the pass I examined a sufficient number of cases to convince myself of the fact that those who had these sores had not scars of a previous attack

I do not state this as an invariable rule, but as a general rule to which there are few exceptions, these sores invariably leave an indelible scar

Clinical appearances—I cannot more accurately describe this sore than by saying that from its origin it is hardly distinguishable from a syphilitic gumma of the skin which goes on to ulceration They are, in no stage, "scrofula," but are slow in their progress, the ulcer itself is not distinguishable from a syphilitic ulcer except by the fact that generally around its spreading border are to be seen a row of points about the size of sudamina some what hard, degenerating in appearance This is the only point I know of by which the ulcer taken by itself could be distinguished from a syphilitic ulcer When the ulcer heals it leaves a syphilitic rural looking scar with red firm coloured pigmentation, which pigmentation slowly disappears The ulcers vary in size up to the size of a five shilling piece but are seldom larger than a rupee

Clinical Course—These sores if let alone or dealt with by mild measure will go on for years They are slow in progress and comparatively painless unless irritated They secrete a considerable quantity of sanguinous looking pus which causes itching of the surrounding skin

Treatment—I satisfied myself that any measure short of a mild escharotic is useless It should be carefully observed that the border of the ulcer is the vital part of it, and if that be not dealt with, the treatment, whatever it may be, will be useless Painting them with a sufficient quantity of strong nitric acid or other such agent, taking care that the border is not forgotten, will invariably convert them into an ordinary ulcer which will heal as a matter of course, but patients are seldom willing to submit to chloroform for an ulcer Cocaine as a local anesthetic for the application of strong nitric acid or other such agent is practically useless Nitric acid and such agents are unnecessarily severe, they remove the sound with the diseased tissues and leave a scar larger than is necessary, a point of importance when the ulcer happens to be on the face Two agents I tried with entire satisfaction—(1) Arsenious acid made into a paste with a mixture of lard and soft paraffin 10 grains to the ounce, (2) Pyrogallie acid made up similarly, strength 1 in 10 Either of these agents is as strong as the patient can bear If made stronger they produce such a burning sensation as the patient is physically incapable of bearing The paste should be spread on white leather sufficiently extensive to cover the border of the ulcer leaving a border of the white leather which should be painted with collodion and stuck on, and a bandage applied and renewed once daily for about three days, after such treatment a poultice will fetch off the slough leaving a worm eaten appearance behind it Such an agent is strong enough to produce well marked inflammation in the sound tissues, yet not strong enough to destroy them, but strong enough to destroy the vitality of the diseased tissues which in this case seem to have much less power of resistance than

normal tissues. Care should be taken for an obvious reason to not apply these agents to more than one ulcer at the same time.

I am aware that a common objection can be raised against the use of either of these agents, especially arsenic. It should be remembered that if we use any such agent in such a way so strong as to produce inflammation of the sound tissues, it will not be absorbed. If we use it so weak as not to inflame the sound tissues, it will be absorbed. The rationale is plain. The danger is not in the agent, it is in the manner in which it is used. As a matter of course such agents must be used with care.

Those wishing to investigate the bacteriological aspect of these sores could, I presume, obtain scrapings from the Civil Surgeon of Quetta or of Mich (Mushkaf Bolan State Railway) or Sibi (Sindh).

A VELDT SORE A CASE FOR DIAGNOSIS

By C C MURISON,

LIEUT., I M S

FARRIER I D K, of the 4th Bombay Cavalry, came to hospital on the 9th May 1901, complaining of "sores on the back of both hands." He is a strong healthy looking man of 28 years of age.

History of present illness

The patient stated that at about noon, on the 7th May (two days previous) whilst shoeing a horse he noticed a small blister on the back of his right hand between the metacarpo phalangeal joints of the index and middle fingers. He did not know the cause of the blister. The blister at first was very small, perhaps the size of a very large pin's head and was somewhat itchy. He went on with his work and remembers thoughtlessly having scratched it a few times during the day. At about 8 P.M. the blister had become much larger and was very itchy, and with a burning feeling in the skin for about an inch round it. Before going to sleep he remembers having scratched the blister. Next morning he found that the blister had increased during the night to the size of an eight anna piece and round it there were a few smaller ones varying in size from a pin's head to that of a two-anna piece. On the dorsum of the fingers of the left hand there were also a few small blisters which were inclined to be itchy, but the blisters on the back of the right hand were exceedingly so and with a good deal of burning pain. As the day advanced all the blisters increased in size, and towards evening the original blister burst and a thick yellowish fluid escaped. The man then tied a piece of white cloth over the burst blister and came to hospital the next day.

On examination I found that the man had a superficial dirty sore about the size of a rupee over the metacarpal bones of the index and middle fingers of the right hand. The centre of the sore was red and angry looking, and with a moist scab at its edges. Just above this sore there was another one, a little smaller than an eight anna piece and which was covered with a scab. There were also a good many minute blisters on the back of the hand and fingers.

There was a small sore on the back of the left hand about the size of a two anna piece and which was covered with a scab. There were a few minute blisters between and on the back of the fingers and on the lower part of the back of the left hand. No pus was to be seen on either of the hands. It was found that on pricking the smaller blisters no serum escaped, whereas serum escaped from the centre of the larger

ones but not from their periphery. There was lymphangitis of both arms, and the glands in the right axilla were enlarged and somewhat tender. There were no constitutional symptoms.

Treatment—Half an ounce of magnesium sulphate was given on admission and a carbolic fomentation applied to both hands. The fomentations were continued for four days and then both hands were dressed with boracic ointment. The man was completely cured in fourteen days.

Previous History—The man has had no illness to speak of. He returned from South Africa about three months before coming to hospital. He was in South Africa about eight months, and says that he has never had this affection before nor yet did he see any one in South Africa affected in this way.

Remarks—I think this case resembles a veldt sore although I have never seen one, and yet it seems to agree, with the description of them, which I have read in the medical papers. The following points are of interest in this case—

- (1) The man has been to South Africa and belongs to the Cavalry, amongst whom this affection is said to be common, the sting of the horse fly accounting for the blister.
- (2) The man first noticed the blister in the middle of the day. Some say the blister is due to the tropical sun.
- (3) Peculiar formation of the blister, i.e., serum in the centre and not in the periphery.
- (4) Very little pus formation, in fact none.
- (5) Superficial affection of the skin.
- (6) Rapid growth of the sore and its power of local contagion.
- (7) Multiplicity of the sores.
- (8) Site of lesion—chiefly affecting the dorsum of the hands and fingers.

A Mission of Hospital Practice.

CASE OF PENETRATING WOUND OF ABDOMEN RECOVERY

By C DUER, FRCS,

CAPT., I M S,

General Hospital, Rangoon

YENKIAH, a strong well-nourished Hindoo cooly, aged 28, was admitted to the Rangoon General Hospital at 2-15 P.M., on 13th November 1900, with the history of having first murdered a woman and then stabbed himself in the belly. He was at once taken to the operation room and on removing some dirty cloths tied round him, a large wound with protruding viscera was seen. A towel rung out of hot carbolic lotion 1 in 60 was applied and chloroform administered. There was considerable shock, and blankets and hot water bottles were put to the chest and extremities.

There was a fairly clean cut wound extending from the umbilicus to the ensiform cartilage and prolapsed through it from above downwards were a considerable part of the stomach, some great omentum and some feet of small intestine with a good deal of sand and dust on them. On separating the viscera an extensive vertical wound of the great omentum was found and several considerable spouting vessels were ligatured with fine silk and much blood sponged away. A faecal odour was then noticed, and two wounds in about the same place were discovered in the transverse colon, one in front of,

and the other behind, the great omentum. These were closed with fine silk Lambert's sutures, a considerable narrowing of the gut resulting. Some soft consistent faeces which had extravasated were carefully wiped away. The prolapsed viscera which had been protected by hot towels were then well washed with hot 1 in 80 carbolic lotion and returned into the abdominal cavity which was closed (no drainage being employed) by a continuous catgut suture to the peritoneum, and interrupted silkworm gut sutures including all the other tissues. No general abdominal irrigation was employed. The operation occupied about 1½ hour. There was much collapse. An enema of brandy was administered, and 20 other were injected subcutaneously and 70 ounces normal salt solution were transfused into a vein at the bend of the elbow.

Next day, November 14th, the patient appeared to be doing well. The morning temperature was normal and the evening 99°. There was no distension, but no faeces or flatus had passed. Since a few hours after the operation the patient had taken 1 ounce milk with 1 ounce barley water every hour.

The following day, November 15th, there was considerable abdominal distension and some pain. A large enema with turpentine, and one ounce of sulphate of magnesia by the mouth were administered. In the evening there was great restlessness and much pain. The abdomen was greatly distended and no faeces or flatus had passed during the day. Without removing the patient from his bed two of the middle silkworm gut sutures were removed. Some omentum and gut presented but showed no disposition to prolapse. The gut was incised with scissors, and a good deal of gas and a little faeces escaped. The presenting gut was disturbed as little as possible and was not fixed in situ in any way. The patient experienced almost immediate relief and passed a good night. The dressing had frequently to be changed.

This day, November 16th, the morning temperature was 101°, it having been subnormal yesterday. All distension had subsided. Much faecal matter passed through the fistula and the bowels acted naturally twice.

From this point the condition of the patient gave no further anxiety. He was kept on the same limited diet for seven or eight days. The discharge from the fistula steadily decreased, it was semi solid and probably came from the transverse colon.

By November 27th the fecal fistula had closed, and on this day all the silkworm gut sutures were removed, the wound except where the two sutures were previously removed having firmly healed by first intention.

The patient was discharged to Jail on December 27th. My thanks are due to Assistant Surgeon W. D. Jones for valuable assistance at the operation.

A CASE OF WOUND DIPHTHERIA TREATED BY ECTHOL *

By K. P. BANERJEE,

ASST SURGON,

Bungipore

SAHU SHUK, Mahomedan, male, aged thirty, came into the hospital on 14th March 1901, with gangrene of the left forearm said to have been caused from a neglected incised wound about fifteen days ago.

The skin on the whole of the forearm was gone. The muscles were of green colour and sloughing. Ova of flies (maggots) could be seen on the tissues, appearance hectic.

Temperature 104.8°F. No line of demarcation. The skin of the upper arm cedematous. Pain intense, could not sleep for the last week. Put under chloroform, and the arm amputated at its middle third by modified circular method. The patient felt better after the operation, slept well during the night, and next day the temperature was reduced to 102°F, and became normal on the 4th day. The dressings were changed on the 5th day. There was very slight discharge. The wound improved steadily but rather slowly. The drainage tube was removed on the 10th day.

24th March 1901—11th day upper part of the wound healed up, but there was rather profuse discharge from the lower part of the wound through a small track.

On the 12th day at about 11 P.M., secondary hæmorrhage took place, and the patient lost about a pint of blood before it could be stopped. Pulse was full and quick. Temperature 101.4°F. I opened out the dressings at once, and applied pressure to the axillary artery which stopped the bleeding for good. At this period a small pox case which was in another ward began to desquamate. Precautions were taken to prevent scattering of the scales. The patient progressed favourably till the 1st of April, when again the lower part of the stump looked unhealthy, and gradually became cedematous, and the discharge became thin,ropy and dirty. Temperature rose to 102.2°F. The cicatrices gave way.

On the 3rd April (23th day) the condition of the patient became very serious. The stump had swollen to a great extent. The edges of the wound became everted, and the whole surface of the wound became covered with a thick white leathery membrane which could not be separated without tearing the tissues. The axillary glands were painful and tender. Temperature 103.6°F.

The surface was burnt with pure carbolic acid and dressed with boro iodoform ointment. Tincture steel, quinine, brandy given internally.

For 2/3 days the condition remained the same when a good deal of thick creamy pus came out from far inside the wound. Probe could be passed about 5" up along the track of vessels. The whole line of the cicatrix ulcerated.

Profuse discharge continued persistently for about eight days in spite of all sorts of our ordinary remedies internal and external. The muscles felt like wooden rollers under the skin. Through the gaping wound the internal tissues looked like wash leather.

On the 20th April 1901, contemplating another amputation higher up, I stopped all medicines and prescribed Ecthol (Battie & Co's) 5i doses 4 times a day, and Ecthol lotion (5i to oz i) for dressing.

In three days' time marked change was noticed. The membrane gradually disappeared, the wound looked healthier, and in about a week it was almost healed up.

On the 6th May the patient was discharged cured from the hospital with a good and useful stump, so much so that he could carry a bottle under the armpit.

Since the use of ecthol, the discharge became thin, transparent and gelatinous, instead of thick whitish and purulent.

Remarks—In this case the secondary hæmorrhage was possible after an amputation for gangrene. But the cause of the diphtheritic condition of the wound could not be ascribed to anything else except the presence of a small-pox case in the building. The poisons from the dried up scales must have somehow got into the wound. Ecthol justly deserves the merit for which it was introduced into the medical science. It is desirable that further trials should be given to this new remedy.

* Ecthol is advertised and manufactured by Messrs Battie & Co, St. Louis, U.S.A.—Ed, I.M.G.

THE
Indian Medical Gazette

SEPTEMBER, 1901

MALINGERING IN INDIAN PRISONS

At a recent meeting of the *Bombay Medical and Physical Society* Captain J Jackson, I.M.S., the Superintendent of the Central Prison at Yerrowda, read a paper on "Malingering in Indian Prisons" which appears to us to be worthy of extended notice, as it is the work of an experienced Jail Superintendent, and deals with a subject which must frequently come within the experiences of many of our readers.

As Captain Jackson says, "The prisoner loves above all things to play pranks with his digestive system." Consequently we find many of his methods are directed towards feigning disorders of his digestive tract. Epistaxis of course he can produce at will, and will use the blood to mix with his stool and to produce an appearance of dysentery. Indeed knowing as he well does the importance necessarily attached to bowel-complaints the old jail bird becomes an adept in this form of deceit. Blood can be produced in the stool by a long finger nail or a nail passed into the mucus membrane of the rectum, diarrhoea he can produce by use of castor seeds, cotton leaves, and numerous other chemicals which he can steal from the workshops. Raw grain he knows well will produce a diarrhoea which often simulates cholera, and indeed we have known more than one death from the enteritis thus produced. Piles he can easily simulate by a sharp piece of wood or a long finger nail. Loss of weight he can produce by starving himself for a day, with the judicious use of a purge. This is a very common trick, especially where the medical officer pays too open an attention to the fortnightly losses of weight, and as it is usually rewarded by some extra food or tit-bit, such as meat or fish, the prisoner thinks a day's starvation well repaid by a week or so of extras. The only way to prevent this is for the medical officer of the Jail, while really paying much attention to the weightments, not to show his hand too openly, and to order weightments at odd times, and above all never to allow of the issue of extras to any prisoner in the general file, but only to

those put in special gangs and fed under supervision. In one jail we once took charge of, we found a couple of hundred men getting extras in this indiscriminate way, and every article of extra food had its price in tobacco, ganja or the other contraband articles. To return to Captain Jackson's paper.

Sciatica, lumbago and rheumatism are easily feigned and difficult to detect. Their best treatment is Pacquelin's cautery or acupuncture. In these cases these methods often have a rapidly beneficial effect. Hemisideria is easily produced in its objective side by rubbing a little lime on the tongue and putting some mild irritant into the eye. The "disease" is easily cured, but if the prisoner gets a few days' ease in hospital his end is gained. Otorrhoea is produced by garlic, lime, or jequinity seeds, so also is conjunctivitis. Where the medical officer is looking out for scurvy he will sometimes find it genuinely produced by not eating the vegetable ration, or more commonly by rubbing into the gums a little garlic or lime. In times of the prevalence of pneumonia prisoners will often complain of agonising pain in the side, especially do they learn the symptoms of disease if they have been resident of the hospital for some genuine complaint.

Self-inflicted wounds are not uncommon in order to bring into trouble some overseer or warder who has perhaps been unkind enough to make a seizure of contraband tobacco.

Ulcers the prisoner is an adept in producing. A slight scratch or abrasion can be made into a very real ulcer by the application of lime, garlic, chilies, sulphate of copper, mud, gravel or even bird's excreta. Ulcers on the penis are sometimes even produced in this way.

Captain Jackson tells of an epidemic of large brawny red swellings produced by the introduction of a thread soaked in lime, kerosine, etc., under the skin, and years ago we remember an outbreak limited to a tailoring gang of what the Doctor Babu thought was "beri-beri," produced by the use of a needle and thread soaked in lime and introduced under the skin of the front of the ankle.

How the prisoner can at will produce fever has always been a puzzle to us, and Captain Jackson confesses to doubting the production of fever by use of onions and garlic. We have seen cases, said to be so produced, but we never could experimentally reproduce it in our "control."

Nevertheless all jailors and jail medical subordinates believe that fever can be so produced, Captain Jackson gives one *recipe* for producing fever, *viz*, to sit in the sun, then bolt the breakfast, drink a lot of hot water and then drink salt and water, and vomiting with a rise of temperature will be the natural result.

We have not space to follow Captain Jackson in the rest of his interesting essay. The experiences of our readers could doubtless add many other examples.

One remark we must, however, make in conclusion, that is, that it is most important for the young medical officer not to get into his mind that these self-inflicted and feigned "diseases" are very common. They are common enough, but real genuine disease is still more common, and it is a grievous mistake to make to treat as feigned what is real and genuine. In cases where violent diarrhoea has been produced the case needs just as much treatment and care as if it was produced by the comma bacillus, punishment must come after cure.

In time the medical officer gains experience and is less often deceived, and in no part of his jail work is tact and experience more necessary.

LONDON LETTER

PRIZE DAY AT NETLEY

THE Summer Session of 1901 came to an end on the 29th of June, a month earlier than usual, in consequence of a correspondingly earlier commencement. Five failures took place in the final examination, and the net result was an addition of sixteen officers to the ranks of the Royal Army Medical Corps and of 27 to the Indian Medical Service. The Earl of Northbrook presided on the occasion, and after handing the prizes to the successful competitors delivered a most excellent address in which he referred in warm terms to the manner in which the medical profession had risen to support and supplement the undermanned R. A. M. C. in the South African War, and to the admirable way in which the men employed, whether Military or Civil, had performed their duty to the sick and wounded. He referred specially to the valuable service which had been rendered by Surgeon-General Jameson, the Director-General of the Army Medical Service, in administering the department under circumstances of great stress and strain and arranging for the prompt supply of a sufficiency of men and material in a trying emergency.

THE REFORM OF THE R. A. M. C.

He also alluded to the report of the Royal Commission, which, while fully recognising the good work done by medical officers, indicated that in some directions improvements in organization and power were desirable. This question of reform is now under the consideration of the War Office. Mr. Broderick has, it appears from a statement which he made in the House of Commons last week, drawn up a scheme of regulations in which the improvements which are considered advisable are embodied, and has appointed a committee of "experts" to advise him on the subject. The members of the committee are eminent medical men representing the chief medical schools. Surgeon-General Hooper, representing India, Colonel Keogh, representing the R. A. M. C., and two combatant officers. It is curious to note that the Director-General's office is not represented on this committee, and the service element in its composition seems ridiculously weak as compared with the rest of its membership. Mr. Broderick is credited rightly or wrongly, with a feeling of hostility towards the R. A. M. C., an attitude which, if real, is indeed unaccountable in view of the splendid work which the corps has done in South Africa. He is also credited with a desire to run the medical department of the Army on "Civil" lines. In a speech recently delivered at a dinner of Civil Surgeons who had served in South Africa, he was laudatory and sympathetic, and declared his intention of making the Army Medical Service the "best medical organization in the world." Many of the members of the committee have served in South Africa and seen the R. A. M. C. in actual contact with the emergencies and requirements of war. They may be trusted to oppose any inclination to cripple or degrade the service, and the medical profession generally has always manifested a spirit of loyal support of those members of it who set the army as their field of work. Nevertheless it would have been more satisfactory to find the department more substantially and fully represented on a body to which have been submitted questions relating to its status and interests. Allowing that the public side of the case is of paramount importance, personal considerations, such as those concerning rank and pay, cannot be overlooked.

THE MARSHALL WEBB MEMORIAL PRIZE

It was announced at the meeting that a new prize had been instituted by the widow of the

late Surgeon-Major-General William Marshall Webb, who at one time held the position of Assistant Professor of Medicine at Netley. The prize consists of a bronze medal and £5, and the subject of competition is hospital administration.

MR. CARNEGIE'S GIFT

The presentation of a gift of two millions sterling to the Scottish Universities constitutes a magnificent episode in the history of public benefactions. In my last letter I alluded to the absence of support of scientific research in this country. This splendid donation to the cause of education and science comes as a very striking and substantial evidence that the encouragement of intellectual culture and scientific research is recognized by some at least of the wealthy as a worthy object for the disposal of their money. In the deed assigning these two millions to trustees, Mr. Carnegie says that as he has retired from active business he deems it to be his duty, and one of his highest privileges, to administer the wealth which has come to him as a trustee on behalf of others. He entertains the confident belief that one of the best means of discharging that trust is by providing funds for improving and extending the opportunities for scientific study and research in the universities of Scotland, his native land, and by rendering attendance at these universities possible to deserving and qualified youths.

THE MORTALITY OF OPERATION FOR SCROTAL ELEPHANTIASIS

I observe with great satisfaction that the mortality following operations for scrotal elephantiasis in India has undergone great reduction. This is no doubt due to the smaller size of the tumours, improved methods of operating, and a more rigid employment of aseptic and antiseptic treatment. The phenomenal success attained by Major Havelock Charles as reported in your March number—140 consecutive operations, without a death—can hardly be sustained, but the recent Bengal and Calcutta results noted by Major Charles, namely, 7.8 and 6.9 per cent, and the Madras rate of 2.3 recorded by Lieutenant-Colonel Maitland in your May number, are very satisfactory. I see that Dr. Maitland imputes to me a mortality of 17.7. This is no doubt accurate as far as it concerns the years 1879–83, but a later series of cases for the years 1886–90 published in this

Journal (September 1897, p. 821) gives a mortality of 3.4. I object to have my mortality represented by the earlier figures only. Similarly, Dr. Ernest F. Neve, in the same number, attributes to me a mortality of 21.4 per cent in operations for the radical cure of hernia founded on early and tentative proceedings, whereas the death-rate of all operations of this kind performed by me in the Calcutta Medical College Hospital, as shown by the same table, was 9.4—a high rate, but fairly comparable, all things considered, with results obtained elsewhere.

K. McL.

2nd July 1901

Current Topics.

FIELD HOSPITALS REFORM

We invite the attention of Military Medical Officers in India to the following suggestions for the alteration and improvement of our Field Hospitals, from an officer recently returned from Field Service in China.

"(1) All medicines that can be so obtained should be supplied in tabloid form. The following should be added—Liquor arsenicalis, some preparation of nux vomica or strychnine, sulphate of magnesia, ammoniated mercury, and ophthalmic tabloids. Doubtless many medicines at present supplied could be omitted as seldom or never used.

(2) The following articles might well be omitted from the equipment—

- (a) Dislocation apparatus
- (b) Clavicle apparatus
- (c) Several of the more complicated forms of splints
- (d) Tin fomenting
- (e) Tin for cooking poultices
- (f) Etna, &c
- (g) Camp lanterns of Indian pattern

Practically all these are obsolete and seldom or never used nowadays.

(3) The following changes should be made—

- (a) Brass urethral syringes should be replaced by ones made of glass as being more easily cleaned and rendered aseptic.
- (b) Zinc dressing trays should be replaced by enamelled iron ones which are far cleaner, more durable or able to be used for mercurial lotions.
- (c) Bed-pans or urinals should be provided of enamelled iron, being lighter, stronger, cheaper, and easier cleaned.

(d) Basins, metal, should be supplied in enamelled iron for reasons given above. Those at present supplied soon get worn out and dirty.

(e) Hypodermic syringes should be supplied, all made of metal with asbestos plugs, these are always in working order, easily cleaned and sterilized and strong. They should be supplied in metal cases with the tubes of hypodermic tabloids in the same case.

(f) Reid's stomach pump should be abolished as being obsolete and dangerous to use, a plain soft rubber oesophageal tube being substituted which could be used with the funnel already provided.

(g) Reid's enema syringe and the fountain enema syringe should be done away with, and a good quality Higginson's enema syringe supplied, it being easier cleaned, simple, more efficient, and always in working order.

(h) Spring balance a good Salter's balance should be provided instead of the present pattern, which is quite useless and unreliable.

(i) Ligatures of silk, flax and catgut as at present supplied should be abolished, and ligatures of horse-hair, silk and silkworm gut supplied instead, ready for use, either in cut lengths in tubes filled with alcohol or an antiseptic solution and fitted in suitable can, or else in reels in bottles filled with antiseptic solution. In this case an antiseptic ligature is always to hand.

(j) Antiseptic solution should be abolished, and tablets of perchloride or bin-iodide of mercury substituted as being less bulky, far more convenient, and no risk of broken bottles.

(k) Cloth sheeting for bandages should be done away with, and many more loose woven bandages substituted.

(l) Plain sponges should be abolished as being very difficult to sterilize even in ordinary time, and their place taken by sealed tins of pads of gauze ready sterilized and fit for immediate use.

(m) Far more antiseptic gauze should be supplied if possible in sealed tins.

(n) The amputating case needs a thorough revision. Many of the instruments are old-fashioned and obsolete and in other ways it is incomplete. No wooden handles should be used, but the instruments all forged out of one solid piece of metal and plated wherever possible. They should be kept in a plain wooden or preferably in a metal case (on no account should a velvet lining be used). The following additional instruments are badly needed, viz, sharp spoons, mouth gag, tongue forceps, scissors ordinary and curved on the flat, ear speculum, rectal speculum, forehead mirror, two Jacque's soft rubber catheters, six or more assorted silk web catheters, specially made for the tropics, two glass canulæ for injection of saline solution into the veins or subcutaneous tissues. There are several other instruments not provided which, however, would be most useful, but I have kept from mentioning any but those I consider absolutely necessary.

(o) Chloroform bottle the present form should be changed, and one provided with a well ground

glass stopper and fitted in a leather case used instead (I believe lately some such form as this has been supplied).

The present chloroform mask could well be done away, and one of Schimmelbusch's pattern, which is cheap and aseptic, provided instead.

(p) Operating table the present septic, unsteady and clumsy pattern should be condemned, and a light pattern of folding enamelled iron one with all necessary movements substituted.

(q) Tooth forceps the American pattern at present supplied should be abolished. A complete set of tooth instruments should be provided.

(4) The following articles should be added to the equipment —

(a) Sterilizers for dressings and instruments capable of being heated by spirit, oil or wood. There should be one of each of these supplied to each section.

(b) A small portable urine testing can so as to obviate having to test urine by boiling in a spoon over a match, the only way it can be done at present in a Field Hospital.

(5) Packing —

(a) Field medical companions and field surgical haversacks should be made so as to open out like a hold-all, and each article should have a fixed pocket to hold it so that it can be seen and got at immediately without having to empty out the whole of the contents and then make a search as is required in the pattern at present in use. Something of the kind has, I believe, been constructed by Captain Lalor, R.F.S., but does not appear to have been brought into use.

(b) The dressings, medicines, instruments, etc., should be less mixed up in the various boxes but should be packed more together, e.g., the ear syringe should not be packed in the middle of the antiseptic (?) tow, and some dressings in one box and some in another.

The dressings should be in one or more boxes, medicines in others, operating instruments and appliances in others, and so on.

To conclude —

(a) No Field Hospital except under very special circumstances should ever be used as a standing hospital. The work in it when used as such cannot be carried out properly or to the best advantage.

(b) Last, but not least, all doctors with Field and General Hospitals ought *always* to draw the same pay as if they were in officiating charge of a regiment. They have far more work, worry and responsibility than the regimental doctor, and yet, on the whole, they are the worst paid men in the field.

I think these few changes I have cited above could be easily carried out, and at a very small cost, and they would greatly enhance the efficiency of the Field Hospitals and certainly bring them more up to date—a matter in which they appear to me to be very much behind the times at

present, and in which they compared anything but favourably with those of other nations in China."

We invite the opinions of medical officers on these points

THE GERMAN HOSPITAL AT TIENTSIN

A CORRESPONDENT, back from China, sends us the following — "The chief hospital was located in the buildings which were occupied, previous to the siege, by the Tientsin University. These buildings proved well adapted for the purpose.

"There was a complete and fully equipped Bacteriological Laboratory, the incubators, reagents, apparatus, etc., could be packed securely for transport in strong boxes adapted to fit the large transport waggons used in the German Army. There was also a splendidly equipped X-Ray Department with a steam dynamo, etc. The X-Ray apparatus could also be worked by a benzoin motor, and the whole could then be conveniently mounted on a carriage somewhat resembling a gun carriage in construction, for the purpose of transport.

"A large steam disinfecter for clothes, etc. mounted on wheels was also provided.

"Arrangements had been made to light the operating theatres, and one or two other rooms with electric light.

"There was a large engine house fitted up for the condensation of water for drinking purposes. A steam laundry was in course of construction too.

"Two operating theatres had been provided, one for ordinary cases and one for septic cases. These were both very completely fitted out in every respect, the operating tables being of enamelled iron with every useful movement. There were sterilizers for dressings and instruments (the same are also supplied to every Field Hospital in the German Army). The instrument cases were of wood not lined with velvet, and all the instruments were of metal throughout. There was a very large and well selected assortment of instruments (of the latest patterns) sufficient for all the ordinary operations of surgery. Two of these cases are supplied to each Field Hospital. There was a large supply of the various kinds of antiseptic dressings and bandages.

"Bath-rooms fitted with hot and cold water had also been constructed in liberal quantity.

"For the hot weather many of the wards were fitted up with mosquito-proof rooms in which the beds of the patients could be placed.

"There was a special room divided off into cubicles with dressings, instruments, appliances, etc., kept solely for the use of venereal patients.

"Many of the cases were also housed in special wards of a portable form built of compressed paper on a light frame work, the whole painted over. These were in sections which could be

easily taken to pieces and put together again. They were provided with doors, and glass windows with outside venetian shutters. Some of these houses were divided up into smaller rooms for the use of officers and special cases, whilst others consisted of a single large ward.

"The whole structure packed into wooden boxes (which, when opened, fitted together and formed the floor of the wards) for the purpose of transport, and these boxes could be carried in the waggons used by the Germans for transport purposes. Each ward required, I believe, three waggons to carry it.

"The whole of the arrangements were admirably adapted for a Base Hospital and were as modern and complete as a good civil hospital at home.

"I did not go over any German Field Hospitals, but was informed that they are composed of 200 beds and have six medical officers attached. They are equipped so as to be capable of division into two sections of 100 beds each.

"None of the hospital equipment, etc., is however packed in such a way as to be capable of any other means of conveyance except the transport waggon, so that obviously in many countries where these could not go other arrangements would be necessary."

INOCULATION AGAINST RINDERPEST

FOR several years past the Government of India have been desirous of having some means devised of combating rinderpest, a disease which probably carries off more cattle in India than all other infectious diseases put together, but owing to a suitable laboratory having to be built in the hills Dr Lingard, to whom this work was entrusted, was unable to properly commence his work till after the discovery by Professor R. Koch of the bile method of inoculation. Dr Lingard then worked with Professor Koch, when the latter visited India, and was following it up when illness overtook him and he had to go home on sick-leave.

Captain Leonard Rogers, I.M.S., M.D., was appointed as officiating Imperial Bacteriologist, and lost no time in commencing the necessary experimental work.

It is impossible for us in a brief note to follow the whole of the Report in which Dr Rogers describes his work. The Report, published by the Government of India, consists of 110 large pages, and consists of a full account of previous and concurrent work on rinderpest, of Koch's bile method, of the glycerine bile method of Edington, the filtered bile method, the serum simultaneous method of Turner and Kolle, and the serum re-inoculation method devised by Dr Rogers which he claims to be the most suitable to the disease as met with in India, where the disease is usually sporadic, now and then only bursting out with epidemic violence.

We cannot follow the details of all the numerous experiments with each of the above-mentioned methods, but we must commend the clear way in which the Report is written, each series of experiments ending with remarks in which the results are summed up in a few words and the value appreciated. Section viii of the Report is devoted to a discussion of the relative merits of the different methods of inoculation against rinderpest in relation to Indian conditions. This discussion sums up the advantages and disadvantages of each method.

It is pointed out that the conditions necessary to ensure successful inoculations in India are — (1) simplicity, (2) immediate immunity, (3) lasting immunity, and (4) safety.

Dr Rogers gives the following summary of his own method of re-inoculation, which is best given in his own words as follows:—

RE INOCULATION METHOD

"This modification of the serum simultaneous method consists in using a sufficiently large dose of serum on one side of the animal as to so far counteract the small dose of blood injected on the other side at the same time, that only a mild and safe form of the disease is produced in any of the animals, and no loss is incurred, while those which do not show any reaction at the end of a week or ten days are injected at the end of that time with a second dose of blood which may be from 1 to 10 c.c. By this means a reaction of a mild nature is obtained in practically all animals which have not natural or acquired immunity already, and a whole herd can be given an active and lengthy immunity by its means without making more than a very few of them seriously ill and without any loss. Turner and Kolle advise that as many as possible of the animals should be made as seriously ill as is consistent with the recovery of the vast majority of them, but such a result would not be favourably regarded by the ignorant villagers of this country and would at once bring the method into disrepute. On the other hand, if this is avoided by the use of slightly larger doses of serum, then anything from one to two thirds of the animals will fail to react, and although they will in most cases be protected through the particular outbreak for which they are inoculated, they will be liable to take the disease should it re-appear during the next year or at a later date, and the villagers finding the protection of such short duration, especially as compared with that produced by vaccination against small pox, would soon lose faith in the process. Both these difficulties are got over by the method now described, which I think presents special advantages in the case of the plains animals of India, while by it alone can hill animals be safely passed through a mild attack of rinderpest with resulting long immunity, for in those animals the bile methods are also useless and dangerous, while although temporary immunity of sufficient duration could be obtained by enormous doses of serum alone, the large quantity required would make the method too expensive to be practical on a more than a very small scale, as the dose would most likely have to be several times as large as by the re-inoculation method, by which it already amounts to nine times as much in proportion to the weight of the animal as is necessary for plains cattle. The advantages and disadvantages of this method, in comparison with the serum simultaneous method, may be summed up as follows:—

(a) ADVANTAGES

1 A mild and safe reaction,—but one which the experiments recorded in Section IV of this report prove

to be very nearly if not quite equal in their effects to a severe attack of the disease,—can be obtained in a much larger proportion of the animals than by any other method, without any loss, and with few severe attacks of the disease.

2 Hill animals can be safely passed through a mild attack of rinderpest by this method with little, if any, loss, which cannot be done by any other method, so that it appears probable that it will be applicable to all breeds of cattle, which the failure of the other methods in these hill animals proves cannot be said of any of the South Africa ones.

(b) DISADVANTAGES

1 A second inoculation is necessary in some of the animals, while the reactions following the first injection will have to be carefully watched, and preferably the temperatures should be taken in the evenings of from the fourth to the seventh or eighth days in those animals which have not already shown any evident reactions. The numbers in which this is required would decrease every day, while even if a second injection were given in some of those animals which had already had a slight temperature reaction no harm would result. A veterinary assistant would be quite capable of making these observations, while after he had gained some experience he would be able to detect any fever without taking the temperature of more than a few animals which he was doubtful about. The villages would in any case have to be re-visited to ascertain the results at the end of about a week, when the re-inoculations of the non-reacting animals could be carried out." (Report, p 106)

We strongly commend this valuable report to all interested in the subject of rinderpest. It is valuable not only for the new method described but also for the large number of experiments it puts on record and the clear historical accounts given of previous work on this disease.

Captain L Rogers, I.M.S., is to be congratulated on the publication of the Report which has already been very favourably received by others working on the same lines.

THE REGISTRATION OF BIRTHS, DEATHS AND INFECTIOUS DISEASES IN BOMBAY

DR JOHN A. TURNER, the new Health Officer of Bombay, has lost no time in bringing up a point on which it is of supreme importance that he should have accurate information. We refer to these proposals made by Dr Turner for a better system of registering births and deaths and for the notification of infectious diseases in Bombay, which are given and discussed in the June issue of the *Transactions* of the Bombay Medical and Physical Society.

The proposed system is briefly as follows:—

The present seven Deputy Health Officers shall be retained, and act as Registrars and Medical Attendants at dispensaries, and that 25 more public free dispensaries be established to act as Registration offices, at each of these the medical man in charge will be on duty to treat persons either at the dispensary or in their own homes and to register all such cases of illness or death. This officer shall also register every case of infectious disease and get a fee of Re 1 for so doing. At each of these dispensaries a paid

Hospital Assistant will live to treat patients and act as Sub-Registrar

At these offices or dispensaries the birth and death registration "Kaikoons" will attend daily and send in lists of births and deaths, which it will be the duty of the Registrar to check. All cases of infectious disease to be at once notified to the Health Department, and at the same time the patient is to be treated and isolated as far as possible, if he will not go to hospital.

Again, no dead body is to be disposed of without a certificate from a qualified medical man, and it is to provide such that the dispensaries are proposed. Dr Turner thus proposes to have 29 centres for the notification of infectious diseases, and for the registration of births, deaths and sickness.

Figures are given showing that the extra cost will amount to about Rs 2,196 per month, or say Rs 26,000 per annum.

We understand that the scheme has been received with considerable favour by the medical profession in Bombay. The difficulties to be encountered are, of course, not small, but are chiefly due to the ignorance and poverty of the people who do not usually have medical advice and to the fact that in a hot climate bodies have to be disposed of in a few hours after death.

As soon as the people find that they can have medical attendance at or from the free dispensaries, it is hoped that they will make use of them both for medical advice and for the necessary certificates. It is also suggested that it should be compulsory for the nearest relation of a person dying to produce a certificate from a medical practitioner (who is recognised by the Health Department) within 24 hours of death and to forward it to the nearest registration office.

It is hoped that in this way by at the same time providing the medical attendance and the registration, the people will gradually come to see that there is no hardship attached, and in this way much valuable information as to the incidence of infectious diseases will become available for the Health Department of Bombay.

We wish the scheme every success, it is a practical attempt to deal with an admitted want. Those of our readers who wish to study the scheme in its full detail will find it in a discussion in the June *Transactions* of the Bombay Medical and Physical Society.

ANTI CHOLERA INOCULATION IN BENGAL.

WE are glad to see from a paragraph in the Report of the Sanitary Commissioner for Bengal (Major H. J. Dyson, I.M.S., F.R.C.S.) that an increased number of anti-cholera inoculations were performed during the year 1900. Assistant-Surgeon G. C. Mukerjee, who was in charge of this work, reports that in the Purulia Cooly Depot no less than 13,291 persons were inoculated against cholera, including over 1,000

children. All these cases of inoculation were among labour emigrants proceeding to the tea-gardens of Assam and Cachar. The employers of labour are beginning to realise the value of cholera inoculation. It is unfortunately not always easy, or even possible, to follow up the after-history of persons inoculated, but Major Dyson has quoted a table, received from the Superintendent of Emigration which shows the number of cases among the inoculated and the non-inoculated at Goalundo. From this table it is seen that out of 1,527 non-inoculated coolies who passed through Goalundo 32 or 2.09 per cent got cholera, whereas of 873 inoculated coolies only two (or 2 per cent) were attacked by the disease, that is, the unprotected suffered about ten times as much as the inoculated. Assistant-Surgeon Mukerjee also reports that during his cold weather tour he passed through some villages in the Manbhum District, in which he had practised inoculation the previous year, and though there had been epidemics of cholera in them the inoculated persons escaped. They came to him in numbers, stating that they owed their safety to the inoculation.

It is to be regretted that in their own interest as well as in the interest of science, the medical officers of tea-garden estates cannot report fully on the relative immunity of the inoculated and non-inoculated labourers on their estates. The question of cholera prevention is one of vast importance to the tea-industry.

EVERY hospital and dispensary in the Central Provinces has been provided with antivenene for the treatment of snake-bite, and Colonel Scott Reid, I.M.S., the Administrative Medical Officer, who is much interested in the subject, has issued instructions to all medical officers and subordinates to freely use this remedy. Certainly no person bitten by a snake should be allowed to die without the remedy being tried.

We shall shortly publish another successful case.

There is nothing which would more impress the minds of the peasantry than the recovery by means of antivenene of a patient whom they knew to have been bitten by a deadly snake, and the medical officer of a dispensary who had such a case would probably soon find an increased attendance at his dispensary.

ONE of the most interesting papers read at the last meeting for the season of the *Asiatic Society of Bengal* was one read by the Honorary Secretary in which were recorded some of the experiments carried out at the Indian Museum by a lady on the habits of mosquitoes. She proved that the common Calcutta mosquito *Culex fatigans*, showed a selective preference for the blood of the house sparrow, refusing the blood of Java sparrows and other birds. This is im-

portant as it tends to show that other mosquitoes, e.g., the anopheles, may have a similar preference for human blood. The life of the mosquito was also shown to last from three weeks to a month.

We are glad to see that the question raised by Lieutenant-Colonel Henderson, I.M.S., last year in his report on the Goculdas Telpal Hospital, has not been allowed to drop. This is the necessity for proper street ambulances for the town of Bombay. At present cases of accident have to be brought to hospital in public vehicles which are generally most unsuited for the purpose. We note that the Bombay Corporation approves of the suggestion, but a difference of opinion exists as to whether the ambulances should belong to the Corporation or to the Police. At any rate they must be in the hands of the city police, who are always on duty in the streets.

We are informed that the projected publication of a magazine dealing with oriental methods of medicine has fallen through. We shall publish from time to time some articles by Dr. Hem Chunder Sen, of the Campbell Medical School, Calcutta, on subjects of this nature.

THE subject for the next Parkes Memorial Prize for 1903 will be the "Prevention of Disease among Armies engaged in active operations in the Field, with special reference to the sanitary organisation of a field force."

This prize consists of a bronze medal and 75 guineas, and is open to the Medical Officers of the Army, Navy and Indian Medical Services, of executive rank, on full pay, with the exceptions of the Assistant Professors at Netley. The essay is to be sent to Netley before the end of the year 1903.

We have received a reprint of an article by Captain E. R. Rost, I.M.S., Meiktila, Burma, from the *Journal of Pathology and Bacteriology* on the possibility of treating *surra* by injections of an antiparasitic serum. The identity of *surra* with the dreaded tse-tse fly disease of Africa renders all research into its methods of prevention of the utmost importance.

An article by Dr. E. Hattinez, translated from the Spanish in the *Journal of Tropical Medicine* (July 1st), discusses the existence of Malta Fever in Havana. There appears to be no doubt that a continued fever, clinically identical with Malta fever, does exist in the island of Cuba. Three cases are given in detail which leave no doubt as to the disease, though strange

to say the serum reaction failed in the one case in which it was tried.

AN American Exchange says that Surgeon-General Steinberg, U.S.A., has issued an official order that "hereafter the existence of malaria at an army post would be regarded as proof that a previous order in relation to the destruction of mosquitoes had not been obeyed."

GENERATION of students of Materia Medica have had to remember that the seeds known as *chaulmoogra* (the source of the oil much used in Leprosy) came from the tree known as *Gynocardia odorata*. It now appears from the report of Major D. Prain, I.M.S., that these seeds come from a tree called *Taraktogenos Kurzii*.

SIR GEORGE KING, K.C.I.F., I.M.S., retired, has published the eleventh part of his "*Materials for a Flora of the Malayan Peninsula*."

LIEUT. GAGE, I.M.S., Curator of the Herbarium, Royal Botanic Gardens, Calcutta, has finished a report on diseases of the sugar-cane in Bengal.

THE *Lancet* of 10th August devotes two editorial columns to a very appreciative notice of our special Ophthalmic Number.

OUR ARTICLES FROM CHINA

In the present number we publish a number of articles and criticisms from medical officers recently returned from China. The question of improving our Field Hospitals is one upon which such medical officers feel strongly; they have been able to compare our equipment with those of the hospitals of many other nationalities, and though we may say that on the whole our hospitals have stood the test, yet in several respects they are markedly behind those of other nations. The necessity for the use of tablets instead of bottles of drugs, for altering and improving numerous articles of equipment and for providing means of bacteriological examinations, &c., has been known to medical officers long ago. In these respects we hope that the Government of India will not neglect to make use of the experiences of men recently returned from the war.

We publish with much pleasure the article which holds the premier position in this issue, not only on account of its intrinsic interest, but because it shows that Indian Medical Service officers in China have, by establishing in the enemy's capital an hospital for the benefit of the enemy,—not forgotten in China the best frontier traditions of the Indian Medical Service.

Reviews

A Treatise on Plague.—By Major GEORGE S THOMSON, M.B., &C., I.M.S., and Dr JOHN THOMSON, M.D.S.I. London Swan Sonnenschein & Co, Ltd, 1901 Price 7s 6d

IT is somewhat remarkable that, though five years have now passed since the present pandemic of plague first made its appearance at Bombay, no book on the subject has hitherto appeared based upon Indian experience. Reports written by medical officers, civilians, and even military officers we have had in abundance, but hitherto we have had no book published devoted entirely to this interesting and important disease, and based upon our unique experiences in India. For this reason and others we welcome this little volume by Major G Thomson, I.M.S., and Dr John Thomson. In spite of certain defects of structure and style the book is a valuable one, in that it not only gives the very considerable experiences of its authors but it collects in a convenient form a considerable amount of plague literature.

The contents of the volume may be indicated by the headings of the nine chapters as follows, *viz*, definition and etiology, historical retrospect, incidence, rats and pest, mode of infection in plague, chemical disinfection, plague epidemic in Satara city, Haffkine's plague prophylactic, Parel Hospital Reports, and a bibliography.

The chief burden of our authors' thesis, is "sanitate," "sanitate." They believe that the disinfecting action of sunlight and fresh air are amply sufficient to get rid of plague, hence plague is not to be combated by millions of gallons of perchloride of mercury solution nor even by inoculation, but by the abolition of close, ill-ventilated huts and *chawls* and by abundance of fresh air.

For example our authors write (p 149) "The cause of plague is to be put down to the devitalising life destroying habits of the people. No one who has not mixed with the Deccani people can have any idea of their ingrained hatred of fresh air. They cover their heads with their blankets, shut every door and window, stuff every crevice with rags or paper, and hang curtains about them at night to keep out the air. This habit taken in conjunction with the fact that their houses are generally small, overcrowded, and perhaps dirty make it a wonder, not that they get plague, but that they have escaped it so long." Again (p 157) "Plague is not a dirt disease. Clean Brahmans are attacked and filthy Byrages remain exempt, *kalahlores* in Bombay enjoy immunity, others though cleanly in their habits are attacked, and no condition can be assigned for their being attacked except defective air supply." Plague "is a want of-fresh air disease."

Chapter IV deals in no measured language with the extermination of rats as a remedy against plague. After giving an account of the well-known facts connecting rats and fleas with plague our authors, while they admit that

"destruction of rats is a useful palliative measure of purely temporary benefit" (p 111), go on in words of scorn to gild at those who have advocated such a measure.

"First it is the whitewash brush now the abuse of the rat" (*sic*). Imbecility could "hardly go further or show greater impotency, but an imbecile's reasoning faculties were not always *non est* over those of many guides, and seem only in abeyance we may charitably suppose" (*sic*).

We need hardly point out that strong language and ungrammatical rhetoric are quite out of place in a scientific treatise, and unfortunately we could point to a dozen other parts of the book which are similarly disfigured.

As regards the mode of infection by plague our authors admit that the method of entrance of the germ into the human body is not yet definitely settled, and they discuss the various theories, *eg*, by cuts or abrasions, by the lungs in the pneumonic form, by the alimentary canal, and by aerial infection, which, they consider, is the most general mode.

Our authors are very scornful of all methods of chemical disinfection, and we all admit that the "disinfection" of a native village by buckets of perchloride solution thrown or pumped on to the walls of the huts is very often futile and absurd, as our authors write —

"The combating of pest by solutions of $Hg Cl_2$, made with Indian river water in the rains, when it is like pea soup, or any other natural water, is as useful as pumping rose water through a garden hose for the purpose, and radical sanitary reform, based upon the true theory of the causation of the disease, is applicable at all times, during the rains as well as in the hot season, so that the answer to one of the pet questions of a very astute member of the Plague Commission 'What would you do during the rains?' is universally true—sanitate, sanitate, sanitate" (p 137).

The above sentence, if vague, is at least forcible.

Other chapters in this book contain a lot of valuable information and statistics with regard to the clinical aspects and the treatment of plague. There is an admirable chapter on Mr Haffkine's plague prophylactic and its methods. Our authors admit the value of inoculation, its proved protective power and its harmlessness, but they remark "laboratory test-tubes are not human bodies, nor is the wisdom of the world contained in the result of culture experiments." Quite true of course, but no one ever imagined that inoculation was the *only* means of fighting plague, its great value consists in its immediate application, to sanitate, ventilate and practically rebuild a town or village takes time, and in the meantime thousands die.

We have every desire to deal gently with this book, and we admit it contains a large amount of valuable information on the subject of plague, and its management, we recognise the great experience of the authors and consider that much in the book is of permanent value, but we are constrained to say that the book is badly written, ill-arranged and far too discursive.

in parts. The foundations of an admirable volume on plague are contained within its pages, but it is too full of rhetoric, and strong language for a scientific treatise. Should a second edition of the book be called for, and we admit the necessity for a book on plague, there is much that might be cut out and amended, and a better arrangement of the subject-matter would be desirable, at present etiology, clinical notes, statistics, methods of prevention and treatment are too much jumbled up to make the book either easy reading or of value for reference.

Let these faults be corrected, and let the author get some one of experience in writing to "prune their periods," and a valuable and useful book on plague will be the result.

The book is nicely printed and of convenient size, and reflects credit on the publishers.

Aphorisms, Definitions, Reflections, and Paradoxes, Medical, Surgical and Dietetic—By A. RABAGLIATI, M.A., M.D., F.R.C.S. (Ed.), BRADFORD Denny & Co., pp. xvi+292. Price 7s. 6d. net. London: BAILLIÈRE, TINDALL and CO.

THIS is an extraordinary book, not merely in its title, or in the way it is written, but in the doctrines it advocates. While we all admit that over-eating is a cause of as many ailments as over-drinking, yet we are not constrained to admit that over-eating is the head and front of all our offending against the laws of Nature. Yet this is the burden and the text of Dr. Rabagliati's book. "Poly-sitism" or more vaguely "Kako-sitism" (that is eating too much or bad eating) is the cause, according to our author, of all the ills that human flesh is heir to, from corns to cancer, and our author gives references to cases where both cancer and corns were cured by a sparing diet by "mono-sitism," dissitism, &c., to use the useful if "kako-phonic" phraseology of our author.

Dr. Rabagliati freely attributes even the incidence of the specific infective diseases to bad feeding. He tells us more than once that it is a disgrace to a medical man to have had more than one attack of influenza, for it shows that in spite of suffering the medical sufferer has not amended his ways and become a mono-sitist. The quantity of the food and the number of times it is taken is, our author says, of vastly more importance than what kind of food is taken. Even growing children are directed not to be fed more than thrice daily, and it is stated that measles and other children's ailments are due to over-feeding.

Some of the paradoxes are startling—thus we are told (101 and 107) that "we can frequently relieve constipation by the same means which check diarrhoea, viz., by restricting the diet, this, however, is more of a truism than a paradox, and again "we can frequently fatten thin wasted attenuated persons by the same means by which we can reduce obese persons, viz., by restricting the diet."

But if the physician is startled out of his complacency by this volume, the surgeon will be more so, for our author does not hesitate to say plainly that we have "too much surgery," and (165) that "in a very large number of cases diseases which are treated by surgery would be found amenable to medical management, and chiefly to dietetic management," as examples, he gives effusions into bursæ, piles, and dysmenorrhœa.

We confess not to have been able to follow the author's attempt to introduce us to a philosophy of medicine. Recent authors are never quoted, but frequent references are made to the early Greek physicians.

We have said enough to indicate the extremely original character of the book. It is easy to review it in a scientific strain, but we are compelled to add that much in the book is of value and gives rise to thought. No one can rise from a perusal of it without feeling convinced of the one great fact, which is repeated in the book to an almost wearying extent, that much and many of the common ailments with which as physicians we have to deal, are due to over-eating, but on the whole the book, too, much reminds us of the extremes and extravagances of those writers who would attribute so many human ills to over-drinking. That there is much truth in the book we must admit, that it is all true we cannot believe.

Das Geschlechtsleben in England.—I Bd von Dr. EUGEN DUEHNEN. Verlag von H. Barndorf Charlottenburg, 1901. (M 10)

THIS is the first of a series of works on the sexes in England, by an author who proposes to treat the subject of sex in all countries in some twenty volumes. To judge from the work now before us Dr. Duehnen has prepared himself for his task in that thorough way which is characteristic of his countrymen, but, as nearly all that he states is given at second-hand, he is not likely to make much impression on the English reader who can read a German work which is written in a very easy style for he fails to grasp the true standing of the authorities whose statements he has read with such ease, and reproduces with great impartiality. The judgment of Taine is one for which all will have a high respect, and, whether they agree with Taine or not, all will put him on a level which is much higher than that on which Hector France and W. T. Stead would be placed, yet the latter "authorities" are quoted voluminously. It would, of course, be premature to judge of the work until the other volumes on England have appeared, but we may record our satisfaction at finding that the author is strongly in favour of careful medical supervision of prostitutes, with as a necessary means to this end—the aid of the police. Blaschko and his followers are in favour of the supervision, but condemn the police.

agency, and we agree with the author in thinking that, without the police, the public health cannot be protected in this respect

Current Literature.

PATHOLOGY AND BACTERIOLOGY

Recent work on the cytotoxines and the specific blood test.—A new field in pathology has been opened up by the results obtained from experimental work at the Pasteur Institute during the last two or three years, the first practical result of which has been the discovery of a specific test for human blood, while the possibility of far-reaching and hitherto undreamt of advances in practical medicine being their ultimate outcome makes them of quite exceptional interest. The detailed nature of the work already done, together with the complicated and still disputed conceptions underlying the processes, makes the subject a difficult one to handle clearly and at the same time briefly, but its importance makes an attempt to do so advisable. It has long been known that the injection of the blood of one animal into the vessels of another species may result in an extensive dissolution of the red corpuscles of the latter. This subject has been recently further studied by Bordet, whose papers will be found in the *Annales of the Pasteur Institute* from 1896 to 1901. He found that if the blood of a rabbit is repeatedly injected into the peritoneal cavity of a guinea pig then the defibrinated blood of the latter animal has a greatly intensified poisonous effect when injected into a healthy rabbit, and in a dose of a few cubic centimetres will kill it very rapidly, although it will not have such an action on other species of animals. The changes produced are of a three-fold nature, namely, an agglutination of the red corpuscles, a dissolution of the hæmoglobin, and the production of a precipitate in the serum. If the injected guinea pig's serum is heated to 55° C it loses its power of hæmolysis, but the addition of the serum of a normal guinea pig restores its power. Further detailed work by Nolf (*Annales* for 1900, has shown that the agglutinating action is induced by the injection of the stroma of the red corpuscles, which has been freed from hæmoglobin, while the precipitate is produced by the injections of the globulin of the serum, and the precipitate produced is also a globulin. Further the hæmolysis is due to the hæmoglobin injected, for the red corpuscles when injected alone produce as much hæmolytic power as the whole blood does. In short, like substances induce the formations of toxines which act on the same substances in the blood.

Bordet explains these facts on the following theory. The blood of normal animals contains hypothetical substances called alexines, by the action of which is produced the slight hæmolysis occurring on injection of foreign blood into an animal of a different species, and which is also the active body in producing the breaking up of cholera or other germs when injected into the peritoneal cavity of an immune animal. This action, however, is very feeble under normal conditions. According to Bordet the alexine in any serum which acts on both red corpuscles and bacteria, is one and the same in the case of any one animal, so that it is in no way specific. On the other hand, when the blood of an animal, A (say a rabbit), is injected into another animal, B (say a guinea pig), then the blood of B has a much more powerful action of the blood of A than that of a fresh guinea-pig would have. This action is specific, not being produced on injection of the same guinea pig's serum into any other species than a rabbit to any thing like the same extent, while it will not act on other fixed elements, such as cholera vibrios, but only on the blood elements. This specific action is due to

the presence of a body called a sensitiser or mordant, as, according to Bordet, it has the power of rendering the elements of the blood more sensitive to the action of the alexines of the normal serum, and acts by fixing the alexines on to these elements much as a mordant acts. For this reason they are themselves inert in the absence of alexines, which alone produce the hæmolytic action, and which are destroyed at 55° C.

In a similar way if spermatozoa of an animal A are repeatedly injected into an animal B, then the serum of B will contain a specific body which will paralyse the movements of active spermatozoa of A. Similarly a toxin which will paralyse the action of ciliated epithelium has been prepared, while more recently nephrotoxines, and nervotoxines etc., have been prepared. Metschnikoff has proposed that all such specific toxines should be called cytotoxines.

In this way a series of toxines can be prepared which have a specific destructive action on various fixed elements of a very high degree. These cytotoxines, like other well known albuminous poisons, when injected repeatedly in small and relatively harmless doses bring about the formation of antitoxines in the serum of the animal into which they have been injected, and such antitoxic sera will neutralise the original toxines *in vitro* (their action being increased by heating to 55° owing to the destruction of the alexines in the serum).

Metschnikoff holds that the cytotoxines and the alexines are formed in the phagocytes, but that the former only escape into the serum, while the latter remain in the white corpuscles during life, and only escape into the serum when these cells break down on blood being removed from the body. Experiments of Gangou published within the last few months, support this last statement, and further indicates that the alexines are derived nearly, if not quite, entirely from the polynuclear corpuscles. Metschnikoff, therefore, holds that during life the cytotoxines and the alexines only meet within the phagocytes, and consequently micro-organisms are only destroyed within the phagocytes, and not in the plasma of circulating blood or lymph. He has also been able to prepare a leucotoxine, by means of injecting emulsions of lymphatic glands into a rabbit, the serum of which develops toxines which destroy the white corpuscles of the animal, whose glands were used for the experiments.

Within the last year these observations have given promise of most important practical results, for it has been found by the Paris workers that if very small doses of the hæmolytic toxines only are injected into the species of animal on which they exert their specific action, then instead of destroying the red corpuscles and hæmoglobin they actually have the opposite effect, either with or without a temporary slight destructive effect, and lead to an increase in these elements to even a considerably greater degree than normal. Moreover, good results have been obtained in a few cases of leprosy, which were treated with serum of a goat which had been previously injected with human blood. The nodules became congested and suppurated, degenerating leprosy bacilli being found in the pus cells. Observations which go far to explain the results obtained with Carresquilla's serum recently. Still better results may possibly be obtained with a leucotoxic serum, while time alone will show how far the same principles can be applied to the other cytotoxines, if, for example, the neurotoxins in small doses will stimulate the production of new brain cells there may yet be a chance for the dullest intellects to shine!

But to return from the speculative to the practical it remains to indicate the medico legal importance of these results. This it will be seen at once depends on the fact that the serum of an animal which has been repeatedly injected with the blood of another acts far more intensely on that of the latter species than on any other. Hence if a rabbit is repeatedly injected with human

blood its serum develops an intense action on any human blood, but has no such action on that of any other animal so far tested, with the exception of a slight one in the case of monkeys. We have already seen that the action is threefold, namely, agglutination of the red corpuscles, hemolysis or dissolution of the hæmoglobin from them and precipitation of globulin in the serum. Various suggestions for carrying out the test in practice have already been made. Thus an Austrian worker suggests that the two former actions may be tested by mixing the specific serum with varying amounts of a ten per cent emulsion of human blood or scrapings of a fairly recent blood stain, freshly made with a nine per cent saline solution. The mixture is sealed up in capillary tubes, which are placed horizontally in an incubator at 37° C. The agglutination is estimated by the granular appearance of the sediment, and the pink colouration of the supernatant fluid produced indicates the hemolysis while the time in which these are produced in different dilutions afford data for measuring the activity of the processes. Thus a rabbit, which had been injected three times with defibrinated human blood, yielded a serum when diluted with five to ten times its volume of the suspension of dried human blood, produced immediate agglutination and hemolysis within ten minutes, while when diluted twenty to fifty times agglutination appeared in five minutes and complete hemolysis in two hours, and with dilutions of one hundred times the same effects were produced in two and twenty four hours respectively, at 37° C. Controls put up with the serum of normal rabbits are necessary, while some at least of the red blood corpuscles must be preserved in the stains for this test to be available. For this reason other workers prefer to make use of the precipitation of the globulins from solutions of the blood stains by the specific serum, as this can be applied to any old blood stain long after all corpuscles have disappeared. On the other hand, it has been found that monkey's blood also gives a slight precipitate with the serum of rabbits injected with human blood, although doubtless this difficulty will be overcome in time either by quantitative tests, or by some other means, but the great attention now being paid to the subject appears to be likely to result very shortly in a reliable method of detecting human blood, while by means of a number of serums prepared by injecting the blood of other than the common domestic animals, it should also be possible, given a sufficient but still small amount of blood stain, to decide from what animal the blood was derived.

Such is the present position of this very interesting field of study, and although but the nearest outline of the immense amount of recent work has been attempted in this abstract, it is hoped that it may enable those who have not the leisure or opportunities of reading the original papers to follow the applications of the principles dealt with as they become embodied in practical results in the near future.

LEONARD ROGERS, M.D., M.R.C.P., F.R.S.

ANNUAL REPORTS

THE BENGAL SANITARY COMMISSIONER'S REPORT

THIS report, like others which we have noted, suffers from some degree of compression. The obsolete figures of the 1891 census were necessarily used, as the figures for the new census had not been determined at the time the report was written. The total population of Bengal has risen in the last decade by some three and a third millions, being now over 74,390,000. The decrease in the birth rate in 1900 is remarkable, from 41.03 to 36.95 per mille, according to the new census. This is attributed to the general unhealthiness of the year, and the high prices of food grains. The birth rates in all the other provinces of India also showed a decline, except in Madras, where the increase is very slight.

The death rates are very high, that in Bengal being 36.6 as compared with 31.3 of previous year. In most of the other Provinces the increase was also high, especially in Bombay, Punjab and Central Provinces, while there was a decrease in the death rate in the N.W. Provinces, Assam and Burma. The lowered birth rate of Bengal is seen in all the Divisions, except that of Chittagong. As usual the birth rate in towns was generally less than in the rural districts.

The previous years had been comparatively free of cholera, but the last year of the century was marked by the highest death rate from cholera since the introduction of death registration, viz., 4.64 per mille on the new census figures. The rise in mortality from cholera was general and was higher in all districts except Puri, Malda, Rangpur, Bogra and Pabna. This is attributed to the early cessation of the rains of 1899, combined with the absence of spring rains, and a late monsoon in 1900. These conditions would naturally lead to scanty and so easily polluted water supply. In other cases the floods of September washed abundant dirty material into the water supplies, hence the increase of cholera in Burdwan and Presidency Divisions in October and months subsequent to the floods. We are glad to see that the use of permanganate has extended in several districts though in some (e.g., Patna) it could not be used on account of popular prejudices.

It is satisfactory to find that no less than 13,291 operations for anticholera inoculation were done during the year in the Purnia Cooly Depot. (See above, p. 347.) Small pox caused over 20,000 deaths (2.7 per mille) during the year 1900, this is a high rate, in fact the highest recorded since 1832. As usual the small pox death rate is highest in Orissa, the district of Cuttack alone recording more than one third of the total deaths from the disease in the Province. In Orissa the people are opposed to vaccination and still cling to the small pox spreading practice of inoculation.

The number of deaths returned under the vague and all embracing term "fever" amounted to 1,703,804, or 22 per mille on the new census figures, an increase on the ten year average. There is no doubt that the year 1900 was in every respect an exceptionally unhealthy one. "Fever" is responsible for 66 per cent. of the total mortality of the Province of Bengal. As usual the largest number of deaths took place after the cessation of the rains. Fevers, chiefly malarial, were exceptionally prevalent in the districts of Dinajpur, Faridpur and Malda. In Dinajpur, Dr. Blaker writes, there are 674 square miles of marshy land, but he also states that the increase in mortality from fever was most marked in April—a dry month. This is not easy to understand, if the fevers were malarial. Dr. Pink of Faridpur states that the fever mortality was greatest in November and December, and continues till the rains set in in June. A special report has been sent to Government (but is unfortunately not included in the report) on the increased unhealthiness of Faridpur, which is attributed to the silting up of rivers and general stagnation of water.

We note that the sale of quinine in pice packets continues to maintain an average level, and the sale on the whole increases with the prevalence of fevers.

According to the new census figures 64,664 deaths, or 86 per mille of the population, took place from dysentery and diarrhoea. The incidence of these diseases is not easy to understand, but the 12 districts which in 1900 head the list have also headed the list for several years past. It is not easy to see why Calcutta, Patna, Puri, Cuttack, Saran, Hoogly, Ranchi and Dacca should show a much higher death rate from dysentery, &c., than Jessore, Rajshahiye, Bogra, Nadia or Rangpur. As usual deaths from bowel complaints are most common from July to December.

There is no history of plague in the Report though the disease was present in several parts of Bengal. It is, we presume, to be dealt with in a special report.

In conclusion we have to thank Major Dyson for an interesting report. That the work of a Sanitary Commissioner in Bengal is no sinecure is clear from the fact that Major Dyson travelled over 12,000 miles by rail, river and road, and had to work without the assistance of Deputy Sanitary Commissioners during many months of the year.

THE PUNJAB SANITARY REPORT

THIS report like many others appears in a compressed form and is consequently to medical readers less interesting than usual, for example the great epidemic of malarial fever in the Punjab last autumn, which we referred to before (*Indian Medical Gazette*, 1901, p. 101) is dismissed in 13 lines, though malarial fevers cost no less than 635,895 lives, or 70 per cent. of the total mortality of the Province. If compression is to result in the omission of any account of the causation and extent of an outbreak of this magnitude, Government will soon find such reports of no use to themselves or to any one else. This, however, is not the fault of Lieutenant-Colonel C. J. Bamber, F.R.S., the Sanitary Commissioner, who made a special study of this widespread outbreak. The Punjab in 1900 suffered severely from famine, cholera and malarial fever. The birth rate is as usual higher than that of other Provinces, being 41.1 per mille, or according to the new census

to 37.7 per mille. This is attributed by the Sanitary Commissioner to the great care and supervision of the registration of births. This birth rate is, however, 7 per mille less than that of the previous year, which is probably correctly attributed to the famine which prevailed in 1900. The population of the Punjab has increased by 7 per cent during the past decade, a higher figure than any other Province except Assam.

The death rate is also high, being, according to the recent census figures, 43.9 per mille. This high rate is to be attributed to malaria, cholera and famine. This rate is higher than the other Provinces, except Bombay and the Central Provinces.

Plague but slightly affected the Punjab, only 475 deaths being registered in the three affected districts. Cholera prevailed to a severe extent, causing over 28,000 deaths (1.3 per mille of population). The severity was chiefly due to famine and the disease was much more prevalent in the famine affected districts of Hissar, Lahore, Rohtak, Karnal and Ferozepore. In Hissar and Rohtak the disease continued from the previous year and was at first confined to the famine relief camps. The outbreak in Delhi has been already reported in these columns (*Indian Medical Gazette*, 1900, p. 880). The wells were disinfected with permanganate of potash.

Many new sanitary projects are in hand or being considered, among others improvements to the waterworks of Simla, Lahore, Delhi and Dharmasala. Several important drainage schemes are in progress, and the recent appointment of a special Sanitary Engineer is an evidence that the Punjab is not going to be behind other Provinces in matters sanitary. We would like to hear of the results of giving money rewards and *khulats* to village headmen for sanitary improvements, and the Sanitary Board have devised a scheme whereby any village may receive a grant in the form of a reduction of its land revenue in recognition of good sanitary work.

Captain E. Wilkinson, I.M.S., was Deputy Sanitary Commissioner throughout the year.

Lt. Col. Bainber is strongly of opinion that special arrangements are necessary for the distribution of quinine during the malarial season, especially when serious malarial outbreaks follow on heavy rains in September.

THE ASSAM SANITARY REPORT

HERE again is a report which has only too literally obeyed the orders for compression, and here again we find the local Government is asking for more, and though orders were specifically given to omit tallies of figures from the text, yet this report is now called unintelligible 'without constant reference to the appendices.' Quite so, but why were orders given to this effect?

The birth rate of Assam in 1900 is, according to new census figures, 34 per cent and the death rate only 30. The death rate is very low for a Province which is popularly regarded as unhealthy, whereas these figures show a death rate which is lower than that of the average for Bengal, Central Provinces, Bombay, N.W. Provinces and Oudh and Punjab. The Chief Commissioner does not believe that registration is worse in Assam than in other parts of India. The mortality of infants is high, 208 for males and 179 for females, but it is actually lower than the rates for many other Provinces in India. Considerable attention is paid to registration of births and deaths, and Colonel Carr Calthrop, M.D., I.M.S., the Sanitary Commissioner, believes that progress is being made towards accuracy.

The year was, on the whole, a healthy one in Assam though cholera was severe in three districts, the cholera death rate being 4.51 per mille as compared with a 13-year average rate of 3.21.

In Sylhet district cholera is endemic, and every now and then blazes up into an epidemic. In 1900 it lasted from January till near the end of March. It is said to have started in the town of Sonamganj from an imported case. In Gauhati the epidemic had remained in a desultory way from the previous year. In Nowgong district there was a sudden exacerbation in March, following on dropping cases in January and February.

The Sanitary Commissioner cannot say to what these reputed outbreaks are due—as the district officer said—"the villages were no dirtier than usual, and the indifference shown by the inhabitants to the risk they ran or caused to others were no more proved than before."

This raises the very important question as to whether specific pollution of the water will always account for the persistence in a mild degree of diseases which may be communicated by water. No one nowadays can doubt that severe and sudden outbreaks of dysentery, cholera and typhoid fever are due to specific and often ascertained pollution of drinking water but it is not so easy to explain the dropping cases which are persistent, but for months or years never increase to what could be regarded as epidemics. Yet a knowledge of the origin of the persistence mild prevalence of such a disease is often of greater importance than the cause of a sudden and short lived attack. Why, for instance, should cases of cholera persist in small numbers in January and February and then suddenly cause a severe outbreak in March? The water (*exhiphetes*) must have been polluted in January and February, why then was it not till March that a serious outbreak took place. Such instances are well worthy of observation.

It is also to be noted that cholera was less prevalent in 1900 on tea gardens. No mention is made of anti-cholera inoculation.

This leads us to the mention of small pox, and it would soon as if the chronicles of the near future would be in the position of the writer on snakes in Iceland and be able to say "No small pox in Assam." Out of a total population of 5,275,249 there were only 975 deaths from small pox. Last year Colonel Carr Calthrop was able to report that small pox was practically non-existent in the Surma Valley, and now he is able to state that the disease is in a fair way of being eradicated from Assam, a result on which every one concerned is to be congratulated.

Fevers are of course prevalent in Assam, but not to such an extent as is generally believed. In fact the Chief Commissioner is strongly of opinion that fevers are not such a scourge in Assam as in Bengal. The average in death rate from "fevers" in the Surma Valley has only been 13.8 in the past thirteen years, and only 19 per mille in the Assam Valley. The causes of the comparative immunity of the inhabitants of the Surma Valley are not known, and would be an admirable subject for a medical theorist. Can it be attributed to the same causes as render the native of Central Africa so immune to-day, i.e., excessive ancestral racial experience of the disease?

In discussing the decline and fall of *kala-azar* on which the Chief Commissioner congratulates the Province, one is met with the initial difficulty that the returns will largely depend upon the number of cases which are returned as malarial fever and as *kala-azar*, for we must believe that *kala-azar* is, to a very large extent at least, a severe form of malarial cachexia. There is no doubt that the returns show a remarkable falling off in the number of cases called *kala-azar*, and what is satisfactory is that there has also been a falling off, progressive and maintained, in the number of cases of malarial fever. Hence there can be no doubt that this grave epidemic which some years ago threatened to depopulate Assam is certainly on the wane, and in fact has almost disappeared. This would appear to us to lend support to Rogers' contention of the essential identity of *kala-azar* with the Bengal epidemic malarial fever of the seventies. Incidentally it may be mentioned how the seeming paradox, propounded by Rogers, of an infectious form of malaria has now been given proof, and the infectious nature of malaria is now one of the commonplaces of pathology.

The question of the nature of cases of chronic malaria, in which the parasitic organisms are not usually found, is one of great importance, for these are the cases which die from malaria, not the cases of quartan and tertian, and this is a subject which we should like to see examined by the Royal Society Malaria Committee now working in India.

Correspondence.

LITHOLAPAXY V THE SUPRAPUBLIC OPERATION

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR—The long and interesting article which Dr Keegan contributes to your August number on the work of Assendelft in particular and operative methods of dealing with stone in the bladder in general is very opportune and instructive, so well and so considerably does he put the case that I feel sure every surgeon in India with large experience in this field will endorse his views.

There is no doubt but that Assendelft has attained great success and proficiency in the suprapubic operation, and his work is most useful in showing us that we need not despair of attaining to improved results in the cases which we must relegate to this operation for one reason or another. In comparing litholapaxy and suprapubic lithotomy even if it were admitted that the mortality is the same what a contrast there is between a residence in hospital of about 60 days painfully spent in a constrained position in the one, and about four days of relative comfort in the other.

There is another point which I laid stress on in my contribution to the Stone Number and elsewhere, which is of importance in this discussion, and regarding which Assendelft from his very extensive experience could doubtless enlighten us, viz., the chances of a functionally impaired bladder resulting from the high operation where an incision is made which surely results in a rigid cicatrix in its most contractile part, and in some cases where healing is slow and unsatisfactory does it never happen that the bladder unites in healing with the surrounding tissues in a common cicatrix, giving the organ a second fixed point which would effectually interfere with its contraction and the expulsion of its contents?

Assendelft's admirable work is somewhat discounted by the number of cases he sent away unoperated on, also by his being unable to determine whether two patients had really stone or not inasmuch as they were suffering from cystitis.

I think that it is most probable further that he, like most of us who have had considerable practice in stone districts in this country, has failed to diagnose and extend his admirable skill to the relief of an allied affection, viz., stone in the kidney, and that the 13 patients who had all the symptoms of stone in the bladder but in whom none could be detected and were discharged suffered from this dangerous but remediable affection.

I attach the greatest importance to Assendolft's method of placing his patients in the prone position after operation, thus ensuring complete drainage, and am inclined to attribute to it much of his great and unusual success. In my own limited experience of the suprapubic operation in which I did not adopt or think of this plan, my patients suffered greatly from the defective drainage, the urine welled out into the dressings and irritated the surrounding skin, a considerable portion remaining in the bladder, and the wound, causing not only discomfort, but seriously prejudicing recovery.

With regard to the vexed question of liability to recurrence, Dr Keegan puts the matter very fairly, with an experienced litholapaxist the chances of a particle remaining behind which forms the nucleus for a fresh concretion are practically nil, and when recurrence of this kind does occur, the symptoms will be found never to have been entirely recovered from after the operation, the patient will have cystitis, and the new concretion will be phosphatic, whatever the composition of the original stone.

As Keegan rightly points out recurrence is generally the result of a new nucleus descending from the kidney, an occurrence which should always be expected unless the diathesis be removed. If any considerable period elapses when the patient is entirely free from symptoms of irritation following a litholapaxy it may be fairly assumed that no particles remained, and if a recurrence took place even three months after it should not be presumed, in the absence of bladder irritation meantime, that any particles were left behind.

Yours, &c,

D. LHI,
4th August, 1901 }

J A CUNNINGHAM, M.D.,
Major, I M S

FREYER'S OPERATION FOR TOTAL EXTIRPATION OF THE PROSTATE.

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The clinical lecture on total extirpation of the prostate for radical cure of enlargement of that organ, delivered by Mr P J Freyer at the Medical Graduates' College, London on the 20th June, and reported in the *British Medical Journal* (July 28th) heralds a new and most promising epoch in operative surgery, and is in my opinion one of the most valuable and important clinical lectures which has been published for many years. It will doubtless receive in the editorial columns of this Gazette the prominence it so richly merits, and I venture to state that I voice the opinion of the Indian Medical Service when I say that we one and all feel proud that it should have fallen to the lot of a member of our service to have made this great and important advance in the surgical treatment of enlargement of the prostate. The four cases which form the basis of this most remarkable lecture merit the most careful study of surgeons practising in India, and they foreshadow the enormous relief from suffering which Freyer's operation is destined to confer on that large class of middle aged male patients, who as they approach the evening of their days see them darkened by the shadows of catheter life. As yet it is too soon to speculate on the probable mortality which may follow total extirpation of the prostate, and we shall require the faithful record of a long series of cases before we can safely determine this very important point. But it is even now evident that a judicious selection of cases must be made in carrying out Freyer's operation if it is not to be strangled in its birth by a heavy death rate. If the rate of mortality following it should prove to be very trifling, as I think it will be, then there can be no doubt that its sphere will be gradually enlarged, and that men who have already entered on catheter life, and who although leading fairly comfortable lives, resent the irksomeness and inconveniences inseparable from a continued use of the catheter will willingly run a moderate risk to rejoin the control over the bladder which they have lost. And so I would advise caution at the beginning, and I think it would be well at this juncture to refrain from carrying out this operation when it is evident that marked kidney disease co-exists with enlargement of the prostate. When the operation is established on a firm basis, and when experience has proved that in selected cases its mortality is but trifling, it will be then time enough to adopt it in the more unfavourable class of cases. The far reaching results of this new departure in operative surgery are numerous, and that it will prove eminently successful in dealing with a hitherto most unsatisfactory class of calculi in the bladder I have no doubt, namely, in recurrent phosphatic calculi or concretions associated with and caused by enlargement of the prostate.

IOLS, TIROL,
24th July, 1901 }

Yours, &c.,
D F KEEGAN

THE AMERICAN HOSPITAL SHIP RELIEF

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—As the hospital ship now appears to be a recognised part of the medical arrangements in war, a note on the way in which the Americans have met the problem may not be out of place. This ship had served at Manila throughout the Philippine

war, and at various places on the coast, and had come across to Taku to continue her useful work there. The ship was under the medical charge of Surgeon and Major Pearle of the Medical Department of the United States Army. Its functions were rather those of a stationary hospital, therein differing to a great extent from those of our own medical department, where the hospital ships are first class sea going boats of a reasonable speed, the idea being to relieve a base hospital of convalescents or chronic cases, to remove them to their native country, and to return as soon as possible to take a second ship's load. This arrangement apparently will be called for by that nation which possesses a healthy base at the seat of war. In the China war the English had a very convenient and apparently extremely healthy base at Wei hei wai, the Americans had no such convenient locality in which to accumulate their sick. Similarly in the Philippine Islands they found their sick did better off the land. Hence the *Relief* is distinctly a hospital a steamer with a broad beam, not built for speed, but capable of accommodating a great number of sick. The wards were wide occupying the entire breadth of the ship, with wide alleys between the rows of beds. The cots for the sick were in tiers, the lower at a convenient height so that surgical cases in them could be easily attended to, wounds dressed or splints applied by the surgeon standing at the bedside, while the upper bunks were used for medical or convalescent cases. The wards were a considerable distance above the water line, the ports large, and consequently the wards were light and airy. There were two large wards for men, with the operating theatre and other special rooms in the centre between them.

The operation theatre had an easy approach from either ward. It was beautifully fitted, a picture of the most up-to-date surgical equipment combined with the most scientific apparatus for securing the best results of the antiseptic and aseptic system. The scalpels and other instruments were fitted with aseptic metallic handles, and contained in airtight cupboards, which were fitted with aseptic glass trays. The operating table was of the kind seen in the theatres of the large London hospitals, the tables to hold the instruments during operations had glass tops. Of course the room was supplied with the electric light, the light over the operating table being fitted with a proper mirror to throw the light down on the patient. Nothing was omitted, even a large box of lenses for estimating abnormalities of vision was not wanting.

In addition there was a room fitted up solely for pathological and bacteriological work, and under the charge of one medical officer specially told off for the purpose. He had every thing that one might expect to find in the pathological laboratory of a London medical school, microscopes, spectrosopes, microtomes, apparatus for hardening, embedding and staining pathological specimens, and apparatus for purely bacteriological work. The utility of such well fitted department in obtaining and accumulating valuable knowledge on the diseases of tropical campaigns is apparent, and its existence in a department of which a distinguished scientist like Sternberg is the head, is only to be looked for. The thoroughness with which this part of the work was done was shown by a remark of Dr Perrio that "we never diagnose malaria till we have found the parasite in the blood, nor are we satisfied with a diagnosis of enteric fever till we have used Widal's Sedimentation Test." Rooms for sick officers, with dining rooms, and recreation rooms for convalescents completed the upper deck. Below this in addition to store rooms there was a steam laundry at work, worked from the engines. A curious part of the hospital was the embalming department. The bodies of all those dying on the ship are promptly embalmed and put in coffins, which are taken back to America and handed over to the relatives of the deceased.

The nursing was done by men. The medical officers of the *Carthage* were indebted to Surgeon and Major Pearle and his officers for their hospitality and a most interesting visit.

Yours, etc,
E T GORDON TUCKER,
Captain, I M S

Service Notes

AN occasional correspondent writes by last mail—"I was present at the Indian Medical Dinner on the 13th June, and it struck me, as it did others, that our Chairman, Surgeon General Harvey, C B, D S O, committed a tactical error in challenging the accuracy of a statement made two years ago by the Honorary Secretary of the Dinner, Mr P J Freyer, that no honours or rewards have ever been given to members of our service who have distinguished themselves by exceptionally good work in pure Surgery and Medicine. It was a tactical error, as shown later on in the evening, because it is a fact that with the solitary exception of Branfoot, who has done excellent work in gynaecology during a long series of years in Madras, no member of our service during

the last 35 years has ever received any distinction or reward from Government in return for the benefits conferred on the Natives of India by his skill in operative surgery or by the practice of pure medicine. A cursory perusal of the contents of the Special Stone Number and the Special Ophthalmic number of this Journal should be sufficient to arouse the Government's attention to the fact, that hitherto they have been rather slow to reward many of their most deserving public servants, who by the skilful practice of the art of surgery do much towards rendering the Government popular among the teeming millions of India.

"We are all aware that honours have been given to members of our service when they have reached high administrative rank, or when they have had the good fortune to be sent on active military service, or again when having left the beaten track of pure surgery and medicine they have strayed along the pleasant paths of a political career. The physiologist, the botanist, the skilled expert in medical jurisprudence and the jail administrator, have, at times, all received a fair measure of recognition from an appreciative Government. And this is as it should be, if men of many-sided abilities are to be attracted to the service. The rank and file, the men who silently work away year after year in the many important civil medical institutions scattered over the length and breadth of India, and who are the backbone of the service, and have made it what, happily, it still is, the best medical service in the world for the young surgeon or physician who loves his profession, these men, I say, are only too pleased when they see their more fortunate brother officers singled out for honours and distinctions by the powers that be. Nevertheless, they would be more than human if they did not claim some share in the rewards and distinctions given to those who have wandered into the by-paths of medicine and surgery, and unless their just claims are satisfied, discontent is certain to exist throughout the service and the flow of eligible candidates will diminish.

"And so it happened that when Frey's health was proposed at the close of our gathering, he was not slow to accept the challenge thrown down to him by our Chairman, and reiterated with emphasis his statement of two years ago, much to the gratification of most of the members present, and cited Keegan's name as a case in point. It was a pity that in this connection, Frey forgot to mention the revered name of Vandyke Carter,* one of the most accomplished physicians who have ever landed in India and who at the close of his long and brilliant service was permitted to leave its shores undecorated and unwarded."

With reference to the above remarks we may append a list, kindly furnished by an esteemed correspondent, so that our readers can judge for themselves of the facts of the case.

The following list of Honours, Orders, Decorations, &c., bestowed on the Indian Medical Service, has been compiled from the Army Lists of the past half century. It is doubtless incomplete, especially for the Madras and Bombay services, and in many cases the dates are wanting —

I — Bengal

Rank	Name	Honour	Date	REMARKS
Surgn Capt	H F Whitechurch	V O	16th July 1895	Chitral.
Surgeon	W Russell	Baronetcy	1880	
"	G Campbell	"	About 1830	
Surgn -Genl	J Fayer	"	Jan. 1890	
Supy Surgn	C Renny	O B	17th Aug 1850	Punjab
"	B W Macleod	"	17th Aug 1850	Punjab
"	E Tritton	"	1858	Mutiny
Surgeon	J O Brown	"	24th Mar 1858	Mutiny
"	W Brydon	"	16th Nov 1858	Mutiny
"	J Campbell	"	16th Nov 1858	Mutiny
Surgn Major	J R Martin	"	25th Apl. 1860	(Civil)
I G	C Mackinnon	"	1st Mar 1861	
"	J Forsyth	"	29th Aug 1862	(Civil)
Surgn-Major	H B Buckle	"	29th May 1865	
D I G	J Bowhill	"	18th Mar 1867	
Surgn Major	F F Allen	"	10th Sep 1872	
D S G	A O C DeRenzy	"	22nd Feb 1881	
"	S O Townsend	"	22nd Feb 1881	
"	J H Thornton	"	25th Aug 1885	Soudan
Surgn-Col	G Farrell	"	29th May 1886	
"	I. D Spencer	"	27th Aug 1895	Waziristan
"	G Thomson	"	21st Jan. 1896	Chitral
"	G M Davis	"	20th May 1898	Tirah
S. M' Genl.	R Harvey	"	21st May 1898	
Colonel	J T B Bookey	"	1901	China.
I G	J Thomson	K. O B	17th Aug 1850	Punjab
Surgn Genl.	J C Brown	"	29th May 1875	
Surgn Col	G Thomson	"	20th May 1898	Tirah.
D I G	E Hare	O S I	16th Sep 1867	
Surgeon	J Fayer	"	8th Dec. 1868	
Surgn Major	H. W. Bellew	"	6th Feb 1873	
Surgn Genl.	J M Cunningham	"	16th June 1885	
Surgn Major	A. S. Lethbridge	"	21st May 1890	
Surgn-Genl.	W R Rice	"	25th May 1892	
Surgn Major	G S Robertson	"	26th May 1892	Kafiristan.
S M -Genl	W R Hooper	"	22nd June 1897	
"	J Cleghorn	"	22nd June 1897	
Colonel	W P Warburton	"	1st Jan 1899	
D S G	J Fayer	K. O S. I	7th Mar 1876	

* Dr Vandyke Carter was appointed an Honorary Surgeon to the Queen. Surely the O I E, given to Chevers, Morehead and Waring, were purely for professional merit.

Rank	Name	Honour	Date	REMARKS
I G	T Forsyth	K O S I	21th May 1881	
Surgn Major	G S Robertson	"	17th July 1896	Chitral
B S Lt Col	A S Lethbridge	"	20th May 1896	
Surgeon	C W Owen	O M G	15th Feb 1887	Boundary Commis- sion
Major	W R Edwards	"	10th Nov 1880	9 Africa
Surgn-Major	W Jamieson	C I F	"	
Surgn Col	J I Beaton	"	1st Jan 1878	
Surgn Major	I T C Ross	"	1st Jan 1878	
Surgeon	C W Owen	"	21th May 1881	
Surgn Major	N Chevers	"	1881	
"	J F T Atchison	"	1st Jan 1883	
D S G	A M Dallas	"	29th May 1886	
Surgn-Maj	G King	"	1st Jan 1890	
Brig.-Surgn	T I B Brown	"	1st Jan 1891	
Surgn Maj	T H Hendley	"	1st Jan 1891	
D S G	S B Partridge	"	3rd June 1893	
Surgn Col	A H Hilson	"	3rd June 1893	
B S Lt Col	I D Cunningham	"	3rd June 1893	
Surgn Maj	S H Browne	"	1st Jan 1896	
B S Lt Col	B Franklin	"	20th May 1896	
S Lt Col	S J Thomson	"	1st Jan 1894	Iaminc
Lieut Col	H McKay	"	1st Jan 1897	Famine
"	A M Croft	"	23rd May 1900	
"	L A Waddell	"	1901	China.
Surgn Genl	B Simpson	K C I F	15th Feb 1887	
B-S Lt Col	G King	"	1st Jan 1893	
Surgeon	J S Inglis	Knight	Nov 1891	
"	W B O'Shaugh	"	Nov 1895	
Surgn Maj	J R Martin	"	1860	
"	J Ewart	"	24th May 1891	
Surgn Maj	F W Wright	D S O	1st July 1887	Burma
Surgeon	W A Sykes	"	1st July 1887	Burma.
Surgn Maj	W R Murphy	"	25th July 1890	Burma.
Surgeon	F A Rogers	"	14th Nov 1890	China
Surgn-Col	R Harvey	"	19th Nov 1891	Iushai Miranzai
B S Lt Col	G M Davis	"	27th Aug 1895	Wana
Surgn Maj	J Shearer	"	20th May 1898	Tirah
Surgn Capt	W Selby	"	20th May 1898	Tirah
"	J Fisher	"	20th May 1898	Tirah
Surgn Lieut.	J H Hugo	"	20th May 1898	Tirah
Surgn Maj	W N Keefer	Osmantch (4th Cl)	1882	Egypt
A-Surgn.	G S Sutherland	Medjidie	1850	Crimca.
Surgeon	F Odevalne	"	1850	Crimca.
"	J Atkinson	Durani Empire (3rd Cl)	17th Dec 1811	Afghanistan.
Lieut Col.	J Forsyth	K. I H (1C)	13th Apr 1849	
Captain	R N Campbell	"	23rd May 1900	
Major	C H James	"	23rd May 1900	
Major	D W Scotland	K. I H (2C)	23rd May 1900	
Captain	J W Grant	"	23rd May 1900	
Major	W H B Robinson	"	1st Jan 1901	
B-S Lt Col	T H Hendley	V D	18th June 1826	
Lieut-Col	J F MacLaren	"	1901	
Surgn-Maj	A. Grant	Q H S	6th Sep 1861	
D I G	W A Green	"	6th Sep 1861	
"	J C Brown	"	6th Sep 1861	
D S G	S B Partridge	"	23rd June 1883	
Surgn Genl.	J M Cunningham	"	15th Aug 1888	
S M G	J Cleghorn	"	5th Oct. 1893	
D S G	H Cayley	"	11th July 1900	
I-G	C Mackinnon	Q H P	6th Sept. 1861	
"	J Forsyth	"	6th Sept. 1861	
Surgn Maj	E Goodover	"	6th Sept. 1861	
"	J Fayer	"	22nd July 1871	
"	T E Charles	"	23rd June 1883	
D S G	W Walker	"	1890	
Surgn-Genl	W R Rice	"	22nd Apr 1896	
Surgn Col	B Franklin	"	23rd Mar 1898	
D I G	J O Brown	GoodService Pension	18th Dec. 1867	
Surgn Maj	J S Morrisson	"	"	
D I G	H B Buckle	"	7th Oct. 1872	
Surgn-Genl.	J F Beaton	"	"	
D S G	H M Cannon	"	10th Mar 1878	
"	A. O C DeRenzy	"	14th Jan 1882	
"	S G. Townsend	"	1st Mar 1882	
"	J J Clarke	"	9th Dec 1882	
Surgn Genl	B Simpson	"	20th Dec 1885	
D S G	J H Thornton	"	8th Dec 1886	
"	W Walker	"	21st Aug 1887	
"	G Farrell	"	20th Jan 1889	
Surgn Genl.	W R Rice	"	26th July 1891	
Surgn Col	J C Morice	"	2nd Sept 1891	
"	A. H Hilson	"	14th Dec. 1891	
"	C P Costello	"	24th Oct 1891	
"	E O Tandy	"	6th Jan. 1894	
"	R Harvey	"	17th Jan. 1894	
Surgn-Genl	J Cleghorn	"	2nd Apr 1894	
"	J Fayer	"	25th Oct 1898	
Colonel	L D Spencer	"	25th Oct 1898	
"	J H Newman	"	1st Apr 1900	
"	G M Davis	"	1901	

II — Madras

Rank	Name	Honour	Date	REMARKS
Surgeon	J H Orr	C B	10th Nov 1858	Mutiny
"	W Mackenzie	"	23rd May 1859	"
Surgn Genl.	W O Maclean	"	17th July 1871	(Civil)

Rank	Name	Honour	Date.	REMARKS
D S G	C. Colvin Smith	C B	18th Nov 1882	Bgypt
"	J M Donnelly	"	20th Nov 1886	Burma
Surgn Genl	C Sibthorp	"	22nd June 1897	"
I-G	W Mackenzie	K C B	21st June 1887	"
D I G	W Mackenzie	C S I	21st May 1846	"
Surgn Genl	D Blachair	"	31st Dec. 1893	"
Surgn Maj	D R Thompson	O I E	1st Jan 1870	"
Surgn Genl	W R Cornish	"	1st Jan 1880	"
Surgn Maj	F Warley	"	1881	"
D S G	G Bidle	"	1st Jan 1883	"
R Surgn	H E Busted	"	31st Dec 1899	"
D S Lt Col	A M Brannfort	"	21st May 1896	"
Lt Col	W B Browning	"	31st Dec 1893	"
"	W G King	"	3rd June 1893	"
Surgeon	I P Doyle	D S O	23rd Aug 1859	Burma
D S G	O Colvin Smith	Omanish (3rd cl)	1882	Bgypt
I Genl	R Cole	Q II S	6th Sep. 1861	"
D I G	J H Orr	"	14th Mar 1868	"
Surgn Genl	W O Maclean	"	10th July 1890	"
"	G Bidle	"	16th Feb. 1893	"
D S G	C Colvin Smith	"	5th July 1890	"
I G	G Pearse	Q II F	6th Sep 1861	"
D I G	D Macpherson	"	6th Sep 1861	"
I Genl	W Mackenzie	"	14th Mar 1849	"
Surgn Genl	W R G. rubin	"	15th Nov 1885	"
"	C E McVittie	"	23rd Mar 1893	"
"	G Bidle	Good Service Pension	"	"
S M G	W I de Fabock	"	9th Dec. 1891	"
"	C F McVittie	"	17th May 1891	"

III—Bombay

Rank	Name	Honour	Date	REMARKS
Surgeon	J Cramlin	V C	17th Sept 1880	Burma.
"	G M Ogilvie	O B	10th Nov 1883	Mutiny
"	F S Ariott	"	2nd Mar 1899	Mutiny
D I G	I Mackenzie	"	1st Mar 1861	"
"	S M Pelly	"	25th Aug 1868	(Civil)
Surgn Maj	J Mahabadi	"	14th Aug. 1868	"
Surgn Genl	W G Hunter	K C M G	19th Feb 1881	"
Surgn Maj	J W Moore	C I E.	"	"
"	O Morehead	"	1881	"
D Surgn	I B Lyon	"	25th May 1893	"
S Lt Col	F E McGurtie	"	7th Jan 1895	"
Majr	J Cramlin	"	1st Jan 1901	"
Surgn Genl	J W Moore	K I F	24th May 1883	"
D S G	H J Blanc	K C V O	16th July 1901	"
Surgn Maj	A W Street	D S O	1st July 1887	Burma
"	J S Wilkins	"	30th May 1891	"
Captain	P P Kilkelly	Brilliant Star of Zanzibar	1890	"
Lieut. Col	J S. Wilkins	K I H (1st Cl)	1st Jan 1901	"
"	h S. Nariman	K I H (2nd Cl)	28th May 1900	"
Major	H W Stevenson	"	23rd May 1900	"
Lieut Col	M L Barholomew	"	1st Jan 1901	"
D I-G	F S Ariott	Q II S	6th Sept 1861	"
Surgn Maj	O Morehead	"	6th Sept. 1861	"
Surgn Genl	W G Hunter	"	10th Apr 1880	"
Brig Genl	H V Carter	"	8th Mar 1890	"
I G	B P Roake	Q II F	6th Sept 1861	"
Surgn Genl	J W Moore	"	16th Aug. 1885	"
S M G	J Pinkerton	"	22nd Mar 1891	"
D S G	J Wyllie	Good Service Pension	1876	"
Surgn. Genl	J Lumsdaine	"	"	"
B Surgn	C J F Macdonall	"	17th Feb 1895	"
Surgn Col	J Pinkerton	"	17th Jan 1892	"
Surgn Genl	P S Turnbull	"	26th Feb 1892	"
B S-Lt. Col	T Arnott	"	2nd Mar 1896	"
Surgeon	J Burnes	Knight of Hanover	1840	"

On glancing through the above lists, two facts are apparent. The first is that the names of several men of the first eminence, professionally and in the service, do not appear in them at all. The second is, that gaining one honorary reward immensely increases a man's chances of getting a second. "To him that hath shall be given." The names of a very large number of men appear twice in the above lists. Many appear three times, Sir W Mackenzie four times and Sir Joseph Fayrer no less than five times, as CSI, KCSI, Baronet, Queen's Honorary Physician and Recipient of Good Service Pension. To these might be added a brevet promotion for the mutiny, the appointment of Physician Extraordinary to the king, the fellowship of the Royal Society, and the honorary degree of LL D from two Universities, Edinburgh and St Andrews.

In the honours list for the China Campaign Colonel J T B Hooker, I M S, has received the C B. The following is a list of Colonel Hooker's Military Service—Jowaki Expedition, 1877 S, Waziri Expedition 1881, Burma, 1886 7, (despatches medal and two clasps), Hazara, 1888 (despatches and clasp), Miranzai Expedition, 1891, clasp, Waziristan, 1894 5 (despatches and clasp).

This is the only honour for the Medical Department in the *London Gazette*. In the *Gazette of India*, however, we find the names of Lieutenant Colonel W J Rainsford, R A M C, Lieutenant Colonel L A Waddell, LL D, I M S, and Major J J C Watson, R A M C, who are all made Companions of the Indian Empire.

There is no doubt but that Lieutenant-Colonel Rainsford and Major Watson thoroughly well deserved these distinctions, as for Lieutenant Colonel Waddell it is an opinion very generally expressed that he had earned such a distinction long ago by his well known researches into Buddhist antiquities and his reputation as a scholar. However we congratulate him, and are glad to see that an officer so long in civil employ and with a reputation both as a chemist and as an antiquarian should have so rapidly distinguished himself on his return to military employ.

The point, however, which in our opinion is strange is that whereas the R A M C was only represented in China by about a dozen officers, it should have received an equal number of honours as the I M S.

When we remember that the China War led to the despatch of some 130 Indian Medical Officers, to a total stoppage of leave out of India and to the compulsory recall of some 40 Indian Medical Officers who were enjoying their precarious and hard earned holiday at home, it would not have been too much to expect that the service which had borne so much should have had a larger share in the rewards.

Already the stoppage of leave has to some extent affected the recruiting for the service, and the Government of India would have done a graceful act in remembering the hardships which the China War inflicted on a large number of its officers.

In reply to a correspondent who asked for information on the subject of good service pensions we quote the following regulations—

1491 Fifty good service pensions of £100 a year, payable in England, or Rs. 1,000 a year, payable in India, at the option of the recipient, will be distributed among the officers of the several Staff Corps and of Her Majesty's Indian Army at the three presidencies.

1495 Officers of all ranks, including officers of the Royal (late Indian) artillery and engineers, are eligible for these pensions, as well as officers of the new line regiments so far as service rendered before their transfer to the line is concerned, and officers of the Indian Medical Service will be considered eligible for the pensions on the recommendation of the Government of the presidency to which they belong, supported by that of the Government of India, but except under very special circumstances the grant will be restricted to officers above the rank of Lieutenant.

1496 The good service pension will be given up by an officer on his resignation of the service or on coming into receipt of the colonel's allowance, and in the case of a medical officer on coming into the receipt of the special additional pensions of £350 and £250, allotted respectively for the grades of Surgeon General of the Indian Medical Service and Colonel of the Indian Medical Service on retirement, but an officer placed on half pay or retiring upon full or half pay pension will retain the good service pension in addition to such half pay or pension. (See Article 1497.)

1497 An officer who joined the Indian Staff Corps or the Indian Medical Service after the 1st July 1881 will not retain the good service pension after retirement on pension.

1498 Ordinarily the good service pension will be conferred upon officers of the effective list, but officers who may have been placed on half pay or officers who entered the Indian Staff Corps or the Indian Medical Service before the 1st July 1881 who may have retired from the service on full or half pay pension will also be considered eligible for them.

1499 The annuities granted as rewards for distinguished or meritorious service to officers of the British service are awarded to such officers under the regulations contained in the Royal Warrant in force, and such annuities may be drawn by officer serving in India at the exchange of $\frac{8}{2} - \frac{0}{3}$ the rupee.

(A R I VOL. I PART I.)

The following is a list of the Medical Officers remaining in China with the winter garrison—Principal Medical Officer Colonel O Connor, I M S.

No 15, British Field Hospital—Captains Browning, Hayes, Matchell, and Brogden, R A M C.

No 3 Native General Field Hospital—Lieutenant-Colonel Burton, Captain F D Drown, Lieutenants V Roberts, D N Anderson, and Walter.

No 51, Native Field Hospital—Major Moore, Captains Sargent and Hunt, and Lieutenant Beamish.

No 57, Native Field Hospital—Majors W White and Ozzard, Captain Cleveland, Lieutenant G R Stewart.

No 68, Native Field Hospital—Majors Greany and Rickotts
 Captain Wall, Lieutenant McKechnie
 Base Medical Store Depot—Major Daly
 14th Sikhs—Captain Sharman
 Hongkong Regiment—Lieutenant McGan
 1 4th Gurkhas—Captain Lindesay
 6th Burma Battalion—Captain R G Turner
 2nd Rajputs—Captain C Hudson
 30th Bombay Infantry—Captain G McPherson
 On Special Service—Major Mamfold
 All the above, with the exception of the officers of the British
 Field Hospital, belong to the Indian Medical Service

On the 1st August out of the 43 sanctioned appointments for
 I M S officers in the Civil Medical Department, Madras, 18 were
 absent, 53 names are on the rolls. The following officers with
 drawn for military duty had not yet returned on 1st August, viz—
 Lieutenant-Colonel Hakim, I M S., Captain R K Mitter, I M S.,
 Captain J H. Folkes, I M S., Captain P E Watson, I M S., Captain
 C G Webster, I M S., and Captain W Lothbridge

CAPTAIN P C GABBATT, I M S., is acting as Personal Assistant
 to the Surgeon General, Madras

WE regret to hear that Captain C C Barry, I M S., Civil
 Surgeon of Mandalay, has been seriously ill, the result of sepsis
 introduced during an operation. He has been operated upon by
 Captain Duer, I R C S., I M S. We understand that Captain Barry
 will have to go on leave

WE understand that medical officers in civil employ in Burma
 are petitioning to be granted the "Burma allowance" of Rs 100
 per mensem, which we understand is given to all other permanent
 officers in the Province, including the medical officers of the
 Burman regiments. The grounds for this allowance have been
 considered to be (1) the expense of the province (2) its
 unhealthiness, (3) the distance from home

It seems to us that the petitioners have a good case, which we
 hope will be favourably considered by Government

LIEUTENANT COLONEL G J KELLIE, I M S., is appointed to act
 as Sanitary Commissioner, Hyderabad Assigned Districts, during
 the absence on leave of Lieutenant-Colonel C L Swaine, M D,
 I M S

THE following is the list of the services of Colonel George McB
 Davis, M D, C B, I M S., who has just returned from service in
 China and has been granted the "good service" pension in the
 room of Colonel J H. Newman, I M S., who has got the "special
 additional pension" of £250. The services of Colonel Davis are
 as follows—P M O, Hazara Field Force 1891, P M O,
 Frontier Force, 1891, P M O, Waziristan Delimitation Escort,
 1894, P M O, Peshawar District, 1895-7, P M O, 2nd Division,
 Tirah Force, 1897-8, P M O, P F F, 1894-1900, P M O,
 China, 1900-01. The following are his war services Waziri Ex-
 pedition, 1881, First Miranzai Expedition, 1891, Hazara Field
 Force, 1891, Wana, 1894-5, Mentioned in Despatches, medal and
 D S O, Tirah Force, despatches, India Medal, 2 clasps and
 C B

WITH effect from 25th April Capt T Jackson, M B, I M S., is
 appointed Resident Surgeon, St George's Hospital, Bombay, and
 Professor of Materia Medica and Therapeutics

CAPT S H BURNETT, M B, I M S., is appointed (*sub pro tem*)
 Civil Surgeon, Panch Mahals

DR W S J SHAW, M B, is appointed to act for the Civil
 Surgeon of Sholapur

CAPT J B SMITH, I M S., took over duties of Deputy Sanitary
 Commissioner, G R D, Bombay, on 30th June

LIEUTENANT COLONEL M D MORIARTY, I M S., Civil Surgeon of
 Meerut, was granted 3 months' privilege leave from 18th July

MR BRODRICK'S Committee on the Army Medical Service
 consists of the following—

Dr Howard Tooth, C M G,	St. Bart.'s Hospital
Mr G H Makins, C B,	St. Thomas' "
Mr A D Frupp, C B,	Guy's "
Sir Fred Treves, C B,	London "
Dr A. Ogston,	Aberdeen University
Dr E C Perry,	London University
Surgeon General W R. Hooper, I M S.,	India Office.
Lt. Col A H Keogh, R.A.M.C.	
Major H E R James, R.A.M.C.	

and two Military officers nominated by the Commander in Chief,
 viz., Sir James Willecks and Colonel Ward

MAJOR D W SCOTLAND, I M S., goes as Civil Surgeon to
 Meerut.

WE are glad to see the following improvements are sanctioned
 for the benefit of a very deserving class, and in future, Civil
 Hospital Assistants will be graded and paid as follows—

	11s
4th grade, under 5 years service	25 per mensem
3rd " from 5 to 10 years service	35 "
2nd " from 11 to 16 years service	45 "
1st " from 16 to 20 years service	55 "
Senior grade	70 "

Promotion from the second to first grade and from the first to
 the senior grade will be made by selection without examination,
 the numbers in the senior grade being restricted to a limit of 10
 per cent. of the total strength of Civil Hospital Assistants. At
 the same time, with the object of improving the quality of the
 service, the Government of India have decided that an absolute
 prohibition should be enforced against the employment of students
 familiar only with the vernacular, and that the following English
 qualifications should be demanded

- (a) ability to read fluently and intelligently ordinary English
 prose,
- (b) a knowledge of orthography, and ability to write to
 dictation with a reasonable amount of correctness,
- (c) a complete knowledge of simple Arithmetic up to the Rule
 of Three, and
- (d) ability to read and write prescriptions in English intelli-
 gently

THE following orders are to be observed in regard to the wear-
 ing of miniature medals and decorations—

- (a) Miniature decorations and medals will be worn with mess
 dress, but will not be otherwise worn in uniform
- (b) Officers in mess dress wear the miniature of any orders
 they possess, with their medals, and all grades of order-
 wear the same miniature, viz., that of the companionship
- (c) In evening dress (plain clothes) miniature decorations are
 not worn with the Star and Cross of an Order
- (d) The miniature decorations can be attached by separate
 fastenings

CAPT J M WOOLFE, I M S., has been granted six months' leave
 out of India (M C)

CAPT J DAVIDSON, I M S., has been granted one year's leave out
 of India

CAPT A HOOTON, I M S., is allowed three months' privilege
 leave, and Capt H A F Knapp, I M S., acts as Deputy Sanitary
 Commissioner, C R Dist.

WITH a view to providing an adequate reserve of military assis-
 tant-surgeons for war or other emergency, the Government of
 India, with the approval of the Right Honourable the Secretary
 of State for India, are pleased to sanction the following modifi-
 cations in the organization of that branch of the Indian Subordinate
 Medical Department—

I—The strength of the military assistant-surgeon branch of
 the Indian Subordinate Medical Department will comprise the
 numbers required—

- (a) for military appointments,
- (b) for duty with army departments, medical store depôts,
 Indian marine and the telegraph department, etc.,
- (c) for provincial and railway appointments,
- (d) a reserve of 15 per cent on the total number included
 under (a), (b), (c) for temporary duties and to fill leave
 vacancies.

II—Instead of having a fixed establishment of military assis-
 tant surgeons in civil employment, the civil department is em-
 powered to employ as many as it may find work for. These will
 be supernumerary to the establishment detailed under I and II of
 the distribution list attached to this circular, and will be seconded,
 their names being printed in the army list in italics

III—Military assistant surgeons in civil employment will be
 available for military duty in time of war or other emergency

IV—All military assistant-surgeons are eligible for promotion
 to the rank of senior assistant-surgeon, but those holding provin-
 cial and railway appointments as detailed in III of the distribution
 list will not on promotion revert to the establishment detailed in
 I and II, but will be supernumerary to the authorised establish-
 ment of senior assistant-surgeons for the military department.

V—With the exception of those forming a reserve of 15 per
 cent. of the seconded establishment shown under III of the
 appendix, no military assistant-surgeons of the seconded list can
 be transferred to military duty unless they can be suitably em-
 ployed by the Principal Medical Officer, His Majesty's Forces in
 India, and under no circumstances can they be transferred for
 their own convenience or as a punishment.

I A R, Vol VI, para 1652, is reconstructed as follows
1652 The records of held hospitals will be deposited in the offices of principal medical officers of the districts at the head-quarters station of which the held hospitals are stored, and those of general hospitals in the offices of the principal medical officers in whose districts the general hospitals were established. These records will be retained for three years, and will then be disposed of in accordance with para. graph 1650

I A R, Vol I, Part 1, para 1522 (p 412), is reconstructed, and now contains the recent revised regulations for the Insurance branch of the I M F Fund, and gives details as to the special contributions necessary to provide passage money for widows and orphans

The scheme is a useful one, a single payment of 393 rupees at age of 30 secures Rs 1,000 at death for benefit of family or estate, and the premium may be paid in instalments extending over up to four years

DR SARAT MULLICK, the persistent vilifier of the I M S, has met with a rebuff. A sub-committee of the B M A asked Dr Mullick to attempt to support his misstatements, but he has entirely failed to reply. The Committee mildly "depreciate" Dr Mullick's attitude. It will perhaps be a lesson to those not to listen to the interested grumbings of such men again. We note that Dr Mullick has returned to the attack.

CAPTAIN J DAVIS, Senior Asst. Surgn, has got three months leave

LIEUT J C H LEICESTER, I M S, is appointed to the officiating medical charge of 16th Bengal Cavalry

CAPTAIN W D HAYWARD, I M S, on temporary military duty, is appointed Civil Surgeon of Bankura

LIEUT COL J DUFF, I M S, returns to the Foreign Department, and Colonel Young, I M S, becomes P M O, Presidency District.

Of all medical newspapers *The Medical Press and Circular* has for the past few years distinguished itself by its apparent bias against the "Indian Medical Department," and the Medical Services of the Army. We have more than once exposed its ignorance of the facts

In the first place, we are not aware what exactly the writer means by "Indian Medical Department," he seems to think it is the R A M C. in India, for he writes, "From a scientific point of view, the present system may be regarded as absolutely throttling to all individuality and its resulting efficiency. The test of a man's opinion appears to be his status in the army, a sacrosanct qualification quite apart from such lay trivialities as his scientific attainments." Again after pointing out that the death rate from cholera and enteric fever remains very much where it was remarks that "surely any service with a real grip of the situation would have long placed its standing camps (sic) and barracks on a sound sanitary footing." "So far from that the average view (sic) of the Indian Army Surgeon upon sanitary matters appears to belong to a fossil and pre-sanitary age." "Even now the essentially water borne nature of cholera and enteric fever is not generally recognised—or, if recognised, is not reduced to a practical sanitary basis. The death roll from preventable diseases among British troops is a standing reproach to our medical administration in that Empire. It is a significant fact, moreover, that few, if any, of the great advances in tropical medicine have hailed from India, in spite of the enormously wide field thrown open to scientific investigation."

A MORE absurd and "mixed" attempt at criticism we have never read, in spite of the style and the confused grammar we find the writer has got a hold of two points, one is that cholera and enteric have not decreased, and the other that "few, if any, advances in tropical medicine have hailed from India."

As regards the first we need only remind our critic that enteric fever has not decreased nor disappeared from England, and certainly not from Dublin where the Editor's arm chair is

As regards the second point, we can only say that it shows a complete ignorance of the history of tropical medicine. Instead of being a fact we can safely say that scarcely a single advance in tropical medicine up till a dozen years ago came from anywhere except India.

MAJOR W C H STRICKLAND, I M S, has been granted one year's leave out of India

CAPT A MILLER, I M S, on return from China, is appointed the medical charge of 17th Madras Infantry at Bangalore relieving Dr G P T Groube, I M S, who goes to the 25th Madras Infantry

LIEUT COL J K. KANCA, I M S, on return from sick leave joins the 22nd Madras Light Infantry at Secunderabad

LIEUT COL R R KIRTIKAR, I M S, is advanced to the higher position of his rank, with effect from the 18th May. Lieut. Col Kirtikar entered the Bombay Medical Service in March 1877, and has consequently 24 years' service

THE most junior officer on the Bengal side who has attained to the Brigade Surgeon's rank is Lieut. Col Roderick Macrae who has 26 years' service, and on the Madras side Lieut Col A J Sturmer, I M S, who has also 26 years' service

LIEUT COL P DURRILL PARK, I M S, Residency Surgeon, Jypore, has gone home on furlough for one year, he is succeeded at Jypore by Major Robinson, I M S, from Bikanir

THE services of Capt N R J Rainier, I M S, are placed at the disposal of the Government of the Central Provinces

MAJOR L PISANI, F R C S, I M S, is transferred as Civil Surgeon from Bareilly to Saharanpur

CAPTAIN R F STANDACE, I M S, is appointed an Agency Surgeon, 2nd class, and posted as Residency Surgeon in Mysore

THE *Gazette of India* for July 27th, 1901, contains the list of Hospital Assistants ranking as Subedars, i.e., 1st class Senior Hospital Assistants

THE following is a list of the Surgeons on probation for the Indian Medical Service, who have been successful at both the London and Netley examinations. Combined London and Netley marks—

Charles, G E.	6,168
M'Kendrick A C	5,959
Moses, O St J	5,672
Little, J W	5,413
Sumner, F W	5,285
Nutt, H R	5,234
Barnes, J A	5,073
Ritchie, W D	5,014
Scott, N E. H	4,914
Flomung, I K S	4,873
Hepper, E. C	4,819
Southon, C E	4,803
Fowler, G B	4,685
Husband, J	4,680
Foster, H B	4,630
Butt, G	4,614
Korans, G C L.	4,507
M Conaghey, C B.	4,433
Illius, H W	4,395
Browne, E W	4,390
Christian, J B	4,216
Murphy, A	4,161
Thompson, F T	4,124
Brassey, L P	3,881
Marr, C F	3,843
Box, S	3,761
O'Neil, P L	3,647

LIEUTENANT COLONEL G M GILES' *Handbook of Mosquitoes* has been supplied to every station in the United States Marine Hospital Service

LIEUTENANT COLONEL A H C DANF, I M S, A M O, in Central India, is granted privilege leave for 1 month and 22 days and an extra month of privilege leave on account of famine work

CAPTAIN J CHAYTOR WHITE, I M S, is permitted to return to India from furlough in England

LIEUTENANT COLONEL N CHATTERJI, I M S, will carry on the duties of P M O, Madras Command, during the absence on 90 days leave, of Colonel W E Johnson, I M S

LIEUTENANT COLONEL H HAMILTON, I M S, is granted four months leave in India on private affairs

A CORRESPONDENT sends us the following —

The R A M C and the I M S

"A comparison between the marks gained at the Entrance Examinations for the two services for the last twenty years

Date of Examination	R A M C				I M S				Remarks
	No of vacancies	Highest marks	Lowest marks	Would have passed for I M S	No of vacancies	Highest marks	Lowest marks	Would have failed for R A M C	
February, 1882	15	2,295	1,040	15	8	2,495	1,900	1	
August, 1882	15	2,305	1,870	3	8	2,060	2,185		
February, 1883	15	2,630	2,050	8	5	2,555	2,225		
August, 1883	20	2,410	1,755	13	5	2,475	2,015		R A M C got highest marks
February, 1884	20	2,440	1,920	15	5	2,564	2,040		
August, 1884	30	2,475	1,960	2	5	2,625	2,378		
February, 1885	45	2,510	1,800	20	5	2,590	2,160		
August, 1885	40	2,080	2,070	6	8	3,208	2,760		Marks raised 900
February, 1886	60	3,045	1,040	10	16	3,265	2,710		
August, 1886	41	3,160	2,090	29	25	3,165	2,315		
February, 1887	25	3,390	2,630	19	28	3,435	2,720		R A M C got highest marks
August, 1887	No Entrance Examination				23	3,300	2,760		
February, 1888					14	3,410	3,070		
August, 1888					4	3,470	3,060		
February, 1889					10	3,550	3,170		
August, 1889	8	3,085	2,630	2	12	3,400	3,050		
February, 1890	10	3,095	2,660	2	17	3,205	2,930		
August, 1890	20	3,245	2,825	4	12	3,450	3,140		
February, 1891	20	3,135	2,670	2	21	3,625	2,975		
August, 1891	20	3,300	2,550	2	6	3,660	3,105		
February, 1892	25	3,160	2,605	5	17	3,425	3,060		
August, 1892	10	2,815	2,235	10	17	2,850	2,185	4	
February, 1893	14	2,565	1,990	3	15	3,150	2,505		
August, 1893	12	2,421	1,978	5	12	2,777	2,065		
February, 1894	10	2,819	2,178	9	14	3,120	2,192		
August, 1894	12				14				
February, 1895	12	2,580	1,611	8	18	3,104	1,959		
August, 1895	8	2,635	2,601	5	16	2,605	2,212		
February, 1896	9	2,740	2,000	11	17	3,186	2,223		R A M C got highest marks
August, 1896	13	3,018	1,804	5	12	3,005	2,366		
February, 1897	14	2,272	1,800	N/A	7	2,823	2,506		
August, 1897	19	2,933	1,800	N/A	15	3,124	2,500		
February, 1898	21	2,775	1,943	1	15	3,470	2,721		
August, 1898	16	2,638	1,848	15	20	3,179	2,027		
February, 1899	24	2,903	1,846	17	18	3,457	2,295		
August, 1899	14	2,675	1,800	3	22	3,151	1,939		
February, 1900	17	2,554	1,800	11	18	3,640	2,262		
August, 1900	9	2,779	1,855	2	14	3,476	2,385		
February, 1901	7	2,750	1,905	7	28	3,449	1,895	1	

"Now that the conditions of service in the R. A. M. C. are again in the crucible and that a committee, appointed by the Government, is sitting in London to consider the subject, and to endeavour to find means to stimulate recruitment, which has of late years almost ceased we have thought that it might be of interest to publish a table of the marks gained at the competitions for the R. A. M. C. and for the I. M. S. for the last twenty years, with some comments. As amalgamation with the I. M. S. is one of the methods which have been proposed to revive the waning popularity of the R. A. M. C., the interest of the I. M. S. in the subject is obvious.

"The table of marks gives the marks obtained at the competitive examinations for the R. A. M. C. and I. M. S. for the last twenty years, with the exception of one examination, that held in August 1894 the figures for which we have been unable to get. The admissions by nomination to the R. A. M. C. of late years,

and the second large batch admitted after the examination of February 1895, at the time of the Penjdeh scare, have not been taken into consideration

"It would have been interesting if we could also have given the number of candidates for each service at each of the examinations as the diminution of late years, and the differences between the present time and ten years ago, would have been startling, but we have not got the figures

"At the examination held in August 1895, the maximum marks were raised by 900. No comparison, therefore, can be made between the marks gained before and after that date. Taking the last sixteen years, however, both services appear to have reached the highwater mark of competition about ten years ago. At the examination of August 1891 the first man for each service got the highest marks ever attained at the examination for his service. The highest average marks for the R. A. M. C. were got in August 1890, for the I. M. S. in August 1901

"There is no necessity to enter into a comparison of the marks got by the candidates for the two services respectively. As the

number of vacancies for the R. A. M. C. was for many years much larger than for the I. M. S., naturally a large number of men passed for the former who would have failed for the latter service

"The reason for the falling off in the number of candidates for both services is generally supposed to be the better terms now obtainable by newly-qualified medical men, since the unqualified assistant was abolished and the number of men entering the profession diminished by the extra expense entailed by the extension of the medical curriculum from four years to five. But to one who reads regularly in the *British Medical Journal* the columns devoted to medical ethics and to contract practice, who hears the constant wail of the Irish and Highland dispensary doctors and of the poor law medical officers and public vaccinators in England, who sees how the profession at home is sweated by clubs and medical aid associations, it is hard to believe

that the worst terms ever offered by any of the public services would not be an improvement on the experience that falls to the lot of at least a large number of general practitioners at home

"As regards the proposal for the amalgamation of the two services, no complete amalgamation is at all probable. The subject was thoroughly thrashed out a little more than twenty years ago by a Committee which proposed the separation of the I M S into two distinct services, military and civil, and the more or less complete amalgamation of the former with the A M D, as it was then called. One stumbling block over which this proposal came to grief was the presence of natives of India in the I M S. The Committee suggested that they should be eligible for the civil branch only, a condition which was rejected by the Secretary of State in India.

"Another suggestion which has been made is that the R A M C should be completely withdrawn from India, handing over all their duties in India to the I M S, and should serve like the Army Service Corps at home and in the colonies only. There are usually nearly three hundred officers of the R A M C in India. If they could all be withdrawn at once, the addition of so large a number to the staff now serving at home and in the colonies would go far to solve the most important grievances of the R A M C, which lies at the root of all the other grievances of the corps, as indeed it does in the I M S also, *viz.*, *undermanning*. But it would be impossible to withdraw all the R A M C from India at once. Even supposing that by some doubling up of appointments, and handing over a large number of Civil Surgeoncies to Military, and Civil Assistant-Surgeons, it could be arranged that only 200 men of the I M S should take over the duties now performed by 300 men of the R A M C, it would be impossible suddenly to increase the numbers of the I M S by 200 men. Even if the men could be got (and they could not), it would be a practical impossibility to increase the numbers of the I M S by more than twenty five per cent at one swoop, as any such increase would lead to an absolutely hopeless block of promotion in the future. If any such change were decided upon, the transfer would have to be gradual and spread over a period of about ten years. Even so, it would be, to say the least of it, doubtful whether twenty extra men per year could be got for the I M S for the next ten years.

"The separation of the I M S into two entirely distinct branches, military and civil, with or without amalgamation of the military branch with the R A M C, is a perennial subject of discussion, and has been so at intervals for considerably over a century. It has always been rejected for the same reason, *viz.*, that the officers in Civil employment form a large and useful reserve available for military duty when required. This reason was asserted by the Governor General, Lord Cornwallis, in a minute dated 24th October 1788, as the reason why it was then necessary to keep both military and civil branches of the service on one general list. This reason has ever since been the obstacle to any separation of the two branches. It has certainly not lost force of late years, witness the numbers of officers in civil employment recalled to military duty in 1897 and 1900.

"Another reason which might nowadays be alleged against any proposal to separate the two services is the much larger professional experience gained in civil than in military employment. This was not the case a century ago, when in many instances most of a civil surgeon's time was spent in private trade, and to modern ideas it seems strange that Lord Cornwallis should have laid down that officers in civil employ were not eligible for military promotion unless they had reverted to military duty some time before their turn for promotion came, because civil medical Officers lost touch, not with military rules and regulations, but with the ordinary practical work of their profession.

"Far from the separation of the Indian Medical Services into two branches, military and civil, being advisable, it seems that it would be for the benefit of the State that the two branches should be much more intimately associated than they now are. Under the rules now in force, a man may enter civil employment after two years' military duty, and may spend the rest of his service in that line. Or, on the other hand, he may spend his whole service doing the comparatively light duties of a native regiment. It would be in the interests of the public service if neither of these extreme courses were allowed, but if every officer were obliged to serve for alternate periods in military and in civil employ. To such a rule the only exceptions should be such scientific appointments as those of Superintendent of the Botanical Gardens or Museum, Chemical Examiners and permanent Professors in medical colleges. All others should be kept circulating, for at least the first twenty years of service. Such an alternate change of duty would probably not be popular with the service, but it would be to the interests of the State. There would be no difficulty in calculating the comparative periods to be spent in military and in civil employ, probably they would work out at about two to two and a half years military, to three and a half to four years civil duty. Furlough would usually be taken at the change from one to the other mode of service, but if taken in the middle of one period, would simply postpone the completion of that period by the length of the furlough taken. It

would be necessary also to introduce some minor changes, such as the equalization of military and civil furlough pay, the abolition of officiating pay, &c., but such changes could easily be made. There is, however, one great objection to any such change, and that is the doubt as to whether enough men would enter the service under these changed conditions.

[We are sorry we cannot agree with our correspondent in his scheme for alternate civil and military duty. Such would certainly, we think, be repugnant to a large majority of I M S Officers.—Ed., I M G.]

TIHERAPEUTIC PREPARATIONS

We have received from Messrs Burroughs, Wellcome & Co specimens of **Tabloids of Quinine** for hypodermic use. Such should prove most valuable, as this method of using quinine is now more than ever in vogue.

CORRIGENDA

The initials of Dr U N Brahmachari should be as here printed, not A N as printed in the article on quartan fever in our last issue.

In our comments on the Medical Institutions of Calcutta Report in our last issue we by wrongly reading the line gave credit to the wrong operator for 313 obstetric operations. These were done, as may be seen in the report, by Assistant Surgeon Norendra Nath Bisu, now House Surgeon, at the Eden Hospital, Calcutta.

Notice.

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles Letters and Books for Review should be addressed to THE EDITOR, *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co., Calcutta.

Annual Subscriptions to the *Indian Medical Gazette* Rs 12 including postage.

BOOKS, REPORTS, &c, RECEIVED

Allichin's Manual of Medicine, Vol III (Macmillan & Co.)
The Jail Administration Reports for Madras, C P, Bengal N W P & O, Punjab, &c

Bombay Asylums Reports,
Central Provinces Medical Report.
Central Provinces Sanitary Report
Punjab Sanitary Report.
Madras Maternity Report
Vaccination Report, Assam
Hongkong Report on Malaria, by Dr Bell and Lt Stewart, I M S.
Plague Reports from Bombay Laboratory

COMMUNICATIONS RECEIVED FROM —

Capt. T Delaney, I M S, Kohima, Major Anderson, I M S, Fort Blair, Lt Holdich Leicester, I M S, Capt H Smith, I M S, Jullundar, Lt Marston, I M S, Lt Majoribanks, I M S, Capt. Gordon Tucker I M S, Major Maynard, I M S, Patna, Dr Vadis Lucknow, Lt. Cantile London, Dr Guiters, Cuba, Major Crawford Hooghly, Mr H R Swanzy, Dublin, The Editors, *Lancet* Mr W M Warren Detroit, Lt Col F W Wright, I M S, Wei Hai Wei, Dr Brahmachari Dacca, Dr K N Das, Calcutta, Dr Hom Oh Sen, Calcutta, Major P W O Gorman, I M S, Milan Mir Col. A. Scott Reid, I M S, Peshwarli Major J A Cunningham, I M S, Delhi, Mr P J Froyer, London, Dr D F Keegan, Tyrol, Mr Rog Harrison, London, Dr Tertius Clarke, Pomak, Capt Birdwood, I M S, Naini Tal, Dr G H F Nutall, Cambridge

Original Articles

NOTE ON THE OCCURRENCE OF *ANOPHELES FUNESTUS* AND *ANOPHELES COSTALIS* IN INDIA

By J W W STEPHENS, M D (CANTAB.),

S R. CHRISTOPHERS, M B (VICT.),

AND

S P. JAMES, M B (LOND.),

CAPTAIN, I M S

(Royal Society Malaria Committee)

Two species of anopheles not previously described as occurring in India have been found by us to be prevalent in the planting districts of the Duars

These are *Anopheles Funestus* (Giles) and *Anopheles Costalis* (Loew), and the interest of the discovery lies in the fact that they are the two species of anopheles which carry malarial infection in tropical Africa. It is worthy of note that *A. Funestus* and *A. Costalis* should occur commonly in the district of India where black-water fever is most frequent.

A YEAR'S EXPERIENCE OF THE HABITS OF ANOPHELES IN ELLICHPUR

By WM GLEN LISTON, M.B.,

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Research Laboratory, Bombay.

It must be evident to all who have read the recent literature on the habits of anopheles that these habits differ in different countries and in different parts of the same country where that country is a large one such as India. This variation in their habits is quite apart from seasonal variations in the same district, and from

the variations in the habits of different species of anopheles

It is well therefore to remark, at the outset, that this paper has reference only to the northern part of the Deccan, in particular the Ellichpur district, which is situated about the 21st parallel of northern latitude and 77th meridian of eastern longitude

Character and climate of the country

The Satpura Range of mountains of the Central India Hills, that portion particularly of them called the "Malghat," forms the northern limit of the district. The land from the base of these hills extends southwards, east and west as a vast black cotton plain. The average annual rainfall of the district is about 35 inches, and is for the most part spread over the months of June, July, August, September and part of October. Very little rain falls during other months in the year, occasional showers occur, but seldom more than one inch in total falls during any one of these months. The year may therefore be divided into two periods: (1) June to October, "the rains," at this time all rivers and streamlets are full, and many ditches and drains contain water, (2) the rest of the year "the dry season," when the rivers are small, a mere trickle, with here and there a pool of water in their beds, even these in the latter part of the dry season dry up, and it is then difficult to find any piece of open water.

Like other parts of the Deccan the temperature during the hot weather months of April, May and June is very high, while in the months of December, January and February the temperature is comparatively cool.

The subjoined table shows the average monthly rainfall and temperature records for each month. It shows also the rainfall and average temperature of each month for the year during which the observations about to be given were made. The figures showing the rainfall are those of the Ellichpur Cantonment, while the temperature records and humidity are compiled from the returns of the Amraoti Observatory, which is 30 miles distant from Ellichpur. Amraoti closely resembles Ellichpur as regards climate.

The soil of the district is that which in India is called "Black Cotton Soil." It lies on the surface of decaying rocks. At a distance of about 10 ft from the surface hard "Murrham" is met with. Murrham is the term applied in India to the middle stratum, of the material which results from the weathering of rocks, especially those which contain lime. The upper stratum is the so called "Black Cotton Soil."

	AVERAGE MONTHLY RAINFALL AT ELLICHPUR.		AVERAGE MONTHLY TEMPERATURE AT AMRAOTI				AVERAGE MONTHLY HUMIDITY AT AMRAOTI.	
	During 8 years	During 1900 & 1901	During 8 years		During 1900 & 1901		During 8 years	During 1900 & 1901
			Maximum	Minimum	Maximum	Minimum		
June	5.54	4.98	96.2	76.6	103.2	78.8	73	67
July	8.87	6.65	88.1	73.9	90.3	74.9	83	82
August	5.23	10.41	84.9	73.1	85.5	72.4	88	87
September	7.41	8.41	86.6	72.5	85.7	72.6	86	87
October	6.39		88.3	67.3	90.1	66.1	71	52
November	0.22		84.9	63.7	88.4	62.8	62	48
December	0.54	0.15	82.2	57.1	86.9	62.0	56	58
January	0.23	1.83	83.8	59.1	89.8	62.6	55	46
February	0.46		91.1	62.7	94.0	64.2	49	37
March	0.19	0.23	96.5	69.4	101.7	71.4	37	32
April	0.36	0.10	104.1	76.7	106.6	78.8	34	31
May	0.23	0.82	106.7	80.0	108.9	80.4	41	26

The land is drained by natural rain formed ditches and nullahs and by rivers. The beds of the rivers for the most part are covered with large oval or round loose stones, but here and there the "Muriham" or rock crops up to the surface. In the rains the rivers, ditches and nullahs are flooded with water, as the rains pass off, about the month of October, these dry up. Then the rivers in those parts where loose stones form their beds, dry up completely, but where the rock comes nearer the surface, pools, more or less stagnant and overgrown with green weeds or algae, are formed, these pools are frequently connected with one another by a gently flowing streamlet. In the remainder of this article one river, namely, that which flows through the cantonment of Ellichpur and which is a type of the other rivers is alone referred to.

The crops raised are cotton, jowarie, hemp, and pulses. Rice is not grown. Tanks are conspicuous by their absence. Here and there a certain amount of well irrigation is carried on.

The prevalence of Fever in the District

Malarial fever in the district has a very definite seasonal variation. The number of cases reaches its maximum just at the close of the rains, and it falls to a minimum at the commencement of the hot weather.

The following figures obtained from the Military Hospital where care was taken to arrive at a correct diagnosis by the microscope exemplify this statement—

	Jan	Feb	Mar	April	May	June	July
Admissions in 1900	4	12*	5	3	6	5	12
	Aug	Sept	Oct	Nov	Decr		
	5	11	54	20	8		

These figures, however, do not give an exact statement of the actual number of cases of ague each month in the regiment for two reasons.

(1) Many men came to hospital after their paroxysm of fever, and in these circumstances the malarial parasite was not detected.

(2) Many mild cases of ague were not included in the above list because they were only detained in hospital, not admitted to hospital.

The majority of the cases were simple tertian ague.

These figures show that whereas in the consecutive months of September, October and November there were 85 cases, during all the other months in the year there were only 60 cases. We shall see later that the months of September, October and November are the months in which anopheles breeding places are most widely distributed, and hence the opportunities for infection of man greatest.

Breeding places of Anopheles

The breeding places of anopheles differ during the rains and the dry season. We will first consider the breeding places during the rains and then pass on to consider the breeding places in the dry season.

Breeding places during the rains

At the commencement of the rains the breeding places are few but as the rains continue, the number of these places increases till at the commencement of the dry season, they are more numerous than at any other season of the year.

The collections of water in which anopheles larvae are found at this time are generally shallow collections of water, seldom more than 2 feet deep. They are of small size, not more than 10 yards, and more frequently only a few feet in longest diameter. At this time the collections of water seldom contain any green weeds or algae. They are, as a rule, natural collections of water in ditches or hollows in the ground,

in the open plain, and along the roads. On one or two occasions anopheles larvae were found in artificial collections of water, namely, in cement cisterns which are so common in Indian gardens. These characteristics were peculiar to all the ponds in which anopheles larvae were found at this season, but many ponds with these characters did not contain larvae, even although they were close to similar ponds which did contain larvae. No reason for this selection could be discovered. It is noteworthy, however, that in some instances apparently suitable ponds, which were for a long time unoccupied, though close to similar occupied ponds, did ultimately become occupied, but only after perhaps a month or more. This latter occupation may have been by a different species of anopheles, but my knowledge of the different species of anopheles at the time of these observations was very incomplete. It would appear from the above observations that adult mosquitos tend to return to lay their eggs in pools where already larvae exist. I have observed one pond which on at least four occasions completely dried up (the mud alone remained moist), and was immediately after the fall of more rain re-stocked with larvae, while an almost exactly similar pond only some four yards distant from it never contained larvae. These larvae were derived from eggs which were deposited on the damp mud.

It may be remarked here that anopheles larvae were, as a rule, found by themselves, that is to say, unaccompanied by culex larvae, but this was not always the case. I have found both together, but either the anopheles largely in excess of the culex larvae or vice versa. I have never found both in approximately equal proportions. The breeding places of anopheles therefore do not seem to suit culex and vice versa.

It has been mentioned above that green algae were not a necessary or by any means a common feature of anopheles breeding places in the rains. Many unicellular protozoa and rotifera were always present in the water in which larvae were found. These sometimes had a green colour (they may have been the spores of some vegetable life). These unicellular animals tended to swim about close to the surface film, and would be in the most suitable position for anopheles larvae to feed upon.

No fish were found in any of the breeding places at this time, but frogs were numerous. The water was often very opaque with suspended mud.

Anopheles breeding places during the dry season

As the rains ceased, and the dry weather commenced the places which contained the larvae during the rains began to dry up. Larvae were now beginning to be found more abundantly in the nullahs or streamlets which were daily becoming smaller. The rivers were yet too large to be suitable breeding places. By the end of October the nullahs began to dry up, and the rivers were now small. Anopheles larvae were now found in them. About this time, too, the river had become overgrown with green algae. Four varieties of anopheles to be described were found in the pools in the river bed, viz., A. Rossi, A. Culicifacies, A. Theobaldi, A. Listoni.

As the rainy season ponds dried up, eggs were found deposited on the wet mud at the bottom and edge of the pools.

It is so chanced that in the month of January 1901, a most unusual and heavy series of showers occurred, lasting for a period of about one week, during which time nearly two inches of rain fell. All the old rainy season haunts of anopheles became filled again, and some of them remained filled for nearly a fortnight.

Although during the whole of this period they were kept carefully under observation, in not a single one of these old breeding places could any larvae or eggs be found.

Previous to this, it may be mentioned, test-ponds like those described by Stephens and Christophers had been

* The large number of cases in February of this year may be accounted for by the unusually large fall of rain in January to be afterwards referred to.

made early in the month of December*. These test pools were situated in those places in which anopheles larvae had been found during the rains. The water used in these test pools was river water, that is, water in which larvae were to be found. These larvae were carefully removed by filtering the water through muslin before filling up the test pools. The green weed found in the river was also added to the water in small quantity. These pools were kept going for more than a fortnight by being constantly, i.e., approximately daily replenished with river water. All these conditions were favourable for the development of anopheles.

In not one of these pools were anopheles or culex eggs laid, and this was confirmed, as was already seen under natural conditions during the rainfall in January. These observations show that test pools at an unsuitable season may not detect the presence of anopheles mosquitoes.

To sum up—Anopheles breeding places were found during the rains in ditches and natural hollows in the ground, in a few artificial cement ponds in gardens and very seldom in water courses. At the close of the rains the breeding places were as above with the addition of the small streamlets. As the rain water dried up, the breeding places became more and more localized in the pools of the rivers. Towards the close of the hot weather even the rivers had dried up, and it became impossible to find any breeding places or larvae. With a view to prove whether the proximity to human habitations had anything to do with the presence of anopheles breeding places a visit was made to the forest jungle some three miles distant from the nearest human habitation. Anopheles larvae were found here.

Observations on Anopheles Eggs

Anopheles eggs were frequently found in the natural state either floating on the water attached to grass and weeds at the edge of the pool or lying on the mud at the bank. They were always lying free from one another. Their arrangement reminded me strongly of the arrangement of diphtheria bacilli as seen in stained microscopic specimens, i.e., lying at angles with one another forming Vs Ws and Ys or lying parallel to one another. When pools were drying up during the rains, they were found on the wet mud in great numbers. From July to March adult pregnant females two days after a feed of blood laid their eggs when placed in presence of water as in a test tube or other vessel. Anopheles mosquitoes seemed to have the power to lay their eggs when circumstances presented themselves, viz., the presence of water and season were suitable to the development of the larvae. Mosquitoes kept in dry test tubes never laid their eggs, but when water was added to a tube, the mosquitoes soon laid eggs. In the beginning of March the number of females which laid their eggs when placed in test tubes with water began to decrease. Towards the end of this month no female anopheles when placed in a test tube with water ever laid eggs. It would appear, therefore, that at this season,—that is, from March till June—anopheles mosquitoes do not lay their eggs.

Except in the absence of a free supply of water anopheles eggs always hatched out in 48 hours after being laid. No difference could be detected in the eggs laid during the rains and in those laid towards the end of the cold weather. Anopheles eggs hatch by the raising of a lid or cap at the head or broader end of the egg. No line could be detected to indicate the point at which this lid or cap separated from the rest of the egg before hatching. The process of hatching reminded me of the liberation of the spores from the sporangia of *Filix Mas* (the male fern). In this case moisture acts on the cell walls of certain cells of one edge of the sporangium, causes them to swell and straighten ruptur-

ing thus the more delicate portion of the rest of the capsule. In anopheles eggs, however, I could detect no such spring mechanism.

The following interesting facts were observed—

A certain pool was noticed on two occasions to dry up (i.e., no water remained in it during the intervals of rainfall) during the monsoon. The mud, however, remained damp. On each occasion immediately the pool had been filled again by the rain, very many minute larvae were to be found in it. On a third occasion when this pool was drying it was carefully examined, and many eggs were noticed on the damp mud. These eggs were collected and placed in some water with the idea that they would hatch in ordinary course. In two minutes the water in which the eggs had been placed was full of larvae. A number of these eggs were therefore collected along with the mud where they were found and taken home. Some of the eggs were then placed under the microscope with a little water. It was then observed that they hatched out in few seconds. The mud on which the eggs were deposited was kept moist by being placed in a bowl and covered with a cloth which was always kept wet. A few of these eggs were removed almost daily and placed on a glass slide. A drop of water was then placed on the slide with the eggs. The slide was then placed under the microscope. Almost at once, within a very few seconds, larvae began to escape from the eggs. These examinations were made with the original stock of eggs daily for a period of nearly one month. Unfortunately the experiments were suddenly terminated by an invasion of ants which carried off all the remaining eggs on the damp mud in the bowl. Ants would, therefore, appear to feed upon anopheles eggs. I have since been able to observe that ants collect around a pool which is drying up and which contains larvae or eggs. The ants soon carry off either eggs or larvae which become stranded on relatively firm ground.

Some pieces of the mud on which the eggs were deposited were allowed to dry thoroughly, the eggs were removed and placed in water, but these eggs did not hatch. These observations show that the larvae may remain within the egg in a resting state for some time provided the eggs are kept moist. Desiccation destroys this latent vitality of the larvae.

There were many eggs left in this pond after the supply above referred to had been collected. The pool completely dried up in the end of October. Rain fell in sufficient quantity in January to keep this pool completely filled for a fortnight, but no anopheles larvae appeared in the pool during this time.

These experiments were repeated in an artificial way. The ends of a piece of blotting paper arched over some stones were dipped in water. On the damp piece of blotting paper at the summit of the stones an inch or two above the water level some eggs were placed (both culex and anopheles). These eggs were kept for varying periods, but none longer than three weeks. When the eggs were removed from the blotting paper and placed under the microscope in water, they hatched out in a short time, provided two days had elapsed from the day on which they had been laid. Anopheles eggs gave better results than culex eggs in this artificial method.

Observations on Anopheles Larva

Anopheles eggs hatch when placed in any ordinary water. Eggs were placed in distilled water, in rain water, surface puddle water, in river water, in hard deep well water. In all these the eggs hatched and the larvae survived, and grew for a time at least in the absence of food. Growth occurred for a time because of (1) a certain store of nutritive material derived from the egg, (2) because when some died, the other in the absence of other food preyed on the dead bodies.

The food supply of anopheles larvae consists for the most part of animal matter, chiefly small protozoa and

* Reports to the Malaria Committee Royal Society, 1899 and 1900. Distribution of Anopheles Sierra Leone.

rotifera These appear to be indispensable to the growth of the larvæ. A purely vegetable diet is insufficient. These minute animals abound where algae are abundant, hence larvæ have been considered to live on vegetable diet alone.

Some larvæ were placed in distilled water to which some carefully washed green algae had been added. Although an abundant supply of this was provided, yet the growth of the larvæ was exceedingly slow under these circumstances, and all died before they reached maturity.

The duration of the larval stage varies very considerably and is for the most part dependant on the food supply. It can be hastened by an abundant and suitable food supply and retarded by a deficient or unsuitable food supply.

Many experiments were made in this connection. Larvæ of approximately the same age were placed in various vessels with different food supply, both as regards quantity and quality. Larvæ grow and developed into nymphæ most quickly where an abundant supply of small protozoa with some green algae was given. The algae was added for the benefit of the protozoa, not of the larvæ. Unsuitable food such as banana, bread, meat, pure washed algae retarded growth and produced disease in the larvæ. When the food supply was small in proportion to the number of larvæ, the stronger larvæ killed and fed upon the weaker. Diseased larvæ (those affected with various parasites, vegetable and animal) grow only very slowly. The chief parasites noticed were vorticellæ and a mycelial spore bearing fungus like trycophyton. The former parasite was frequently found in larvæ freshly gathered from natural surroundings, while the latter developed in larvæ that were unsuitably fed with carbohydrate materials such as banana, bread, &c., &c. In suitable surroundings larvæ developed into nymphæ in about one week, whereas with an unsuitable or deficient supply of food, they remained as larvæ for more than one month. Larvæ were able to live in moist surrounding (i.e., without a free supply of water) provided they had access to an abundant food supply. This was secured by keeping larvæ in moist green algae and among moist decaying leaves. Larvæ in these circumstances developed in ordinary course into nymphæ, although after a somewhat prolonged larval stage, and many died, chiefly because of the development on them of parasites. In the absence of food, on damp blotting paper, or moist sand, larvæ soon died.

Fish certainly, when they have no better food, feed upon larvæ but without doubt larvæ are frequently found in pools in which fish abound. The following interesting experiment was made: this experiment showed that the destructive effect of fish on larvæ is more directly due to the fact that they eat the adult mosquito when she comes to lay her eggs on the water, or the eggs themselves shortly after they are laid rather than by eating the larvæ. In my garden were two cement cisterns for storing water for use in the garden. Both were constantly kept supplied with water. In both of them larvæ and eggs of *Culex* and occasionally of *Anopheles* were found. In one of the cisterns some fish were placed, the other was kept as a control. On not a single occasion after introducing the fish to the one pond could I find either eggs or larvæ, either of *Culex* or *Anopheles* in this pond while in the other both were frequently found. One particular occasion was very striking. After the showery weather in January before mentioned, on the first morning of fair weather after three days of rain, in the control pond I found and counted no less than 38 egg boat masses of *Culex*, while not one was found in the fish pond. Presumably the fish destroyed the adult mosquitoes when they came to lay their eggs or the eggs themselves after they had been laid. On calm evenings I could hear the fish jumping at flies as I sat in the garden.

This observation is of interest, too, as pointing to the stimulating effect of damp or rainy weather (possibly because of the presence of water on the land) in causing culices to lay their eggs. The number of eggs found on that particular morning was very much in excess of the normal. The pond always remained filled with water in wet and dry weather alike.

Frogs were frequently found in ponds where larvæ were found. I dissected many of these frogs, but never found a mosquito larva in their stomachs, although I occasionally found adult mosquitos and other flies among stomach contents.

I was unable to find any particular animal that preyed on mosquito larvæ, although I have watched on many occasions the larvæ in their natural haunts. Vorticellæ seemed to find the body of the mosquito larva a suitable resting place.

To sum up briefly *Anopheles* larvæ grow more or less rapidly according to their food supply, which must in part at least consist of animal matter, chiefly small protozoa. Abnormal conditions such as bad or insufficient food supply, scarcity of water, tend to develop disease in the larvæ and much prolonged the larval stage.

Fish and frogs prohibit the development of larvæ more by the destruction of the adult females when they come to lay their eggs on the water than by actually eating larvæ.

Observations on *Anopheles* Pupa

The larva develops into a pupa after a period which varies according to circumstances. This change takes place in the morning hours. The pupa is a resting stage or rather a period of development in which no food is ingested. Very few circumstances appear to affect this stage. I was unable to greatly, or, almost to any extent, prolong the pupal stage. Pupa developed into adult insects under most adverse circumstances. Many, however, in the process of birth died when a free supply of water was not present. The pupa passes into the adult in from 36 to 48 hours.

The adult mosquito escapes from the pupa case in the evening hours. If a number of pupæ are kept in test tubes and watched in the evening from about 5 o'clock till 8 o'clock, the watcher will be sure to be rewarded by seeing the birth of a mosquito. The process of birth is extremely interesting and instructive. Since here, however, forbids a description of the successive stages which from the bursting of the pupa case to the complete liberation of the full fledged mosquito occupies from eight to ten minutes. I have been able to watch the process in nature in pools in the bed of a river, it was essentially the same as occurred in a test tube.

DESCRIPTION OF SPECIES

The following is a description of the species of *Anopheles* found in Ellichpur during the year —

I.—Anopheles Rossii.—Each wing has seven black scaled areas on the costa, the black spot at the middle of the costa is the largest. Three of the black spots at the inner end of the costa are very small and difficult to make out without a lens.

The first longitudinal vein shows five dark spots. The outer four of these have a similar situation to the outer four on the costa. The fifth lies close to the inner end of the vein.

The second longitudinal vein has two dark spots before its bifurcation. There are, as a rule, two black scaled spots on each of the two branches into which this vein divides.

The third longitudinal vein has three dark spots, all small in size.

The fourth longitudinal vein has two dark scaled portions, before its bifurcation, and on each of its branches there are two dark spots.

The fifth longitudinal vein before it bifurcates has one spot, its anterior branch has three dark spots, while the posterior has only one.

The sixth longitudinal vein has two dark spots

The distal extremity of all the wing veins is light scaled, and at these points the costal fringe is interrupted by light scales

The proboscis has a dark brown colour with a yellow point

The palpi show three light scaled areas, viz., an apical portion which is the largest, a narrow circle of light scales at the junction of the distal and third segments, and another similar circle at the junction of the third and second segments. The second segments of the palpi have much larger and longer scales than the other segments

The antennae have dark segments with long silvery hairs arranged in circles around each segment

The head is covered with white scales which are inserted on a dark background. Two prominent tufts of long white hairs are situated above and between the eyes

The nape is covered with brown scales

The thorax is furnished with yellowish white and brown scales and hairs on a brownish background, and are so arranged that three somewhat indistinct longitudinal lines can be made out, the most prominent being a central one

The abdomen is covered with yellowish brown hairs and scales and is divided distinctly into segments by darker bands at the anterior extremity of each segment. The lighter portion of each segment, however, largely predominates

The legs are of a brownish hue and show lighter scaled spots of a yellowish colour at the distal extremity of the femur, tibia, and all the tarsal segments except the last. The marks on the tarsi are at the joints between the segments, and it is hard to say whether the lighter spots occur on the distal or proximal portion of each segment or on both extremities of the segments. The marks on the tarsal joints of the hind legs are smaller than those on the other legs

II *Anopheles Listoni*.—The wing has four yellowish white scaled areas on the costa. The smallest of these is situated at the apex of the wing, the others increase in size from this point inwards. The first longitudinal vein has four light scaled areas corresponding with the four light scaled areas of the costa, but in addition there is a larger white scaled portion at its inner extremity. The second longitudinal vein shows three small white scaled areas. The outermost is situated at the bifurcation of the vein and in part involves both branches. The other two are situated at the position of the transverse veins. The third longitudinal, in contrast to the other veins, is for the most part light scaled, but has two small dark scaled areas towards its inner extremity and one dark scaled portion towards its outer end. The fourth longitudinal is for the most part dark scaled except for a short distance at its inner extremity which is light scaled, and for a few light scales at the transverse veins, and at its bifurcation the light scales at this point are continued for a short distance on each of the two branches. The fifth longitudinal is white for most of its inner portion except for a small dark scaled spot towards its inner end. This vein is black scaled at its division into branches. The anterior branch is dark throughout except for a few light scales at the transverse vein and at its extreme outer extremity. The posterior branch has a short white scaled portion shortly after its distal end, the remainder of this branch is dark scaled. The sixth longitudinal vein is for the most part black scaled, but shows two small white areas, the one at its inner extremity, and the other between the two black scaled portions. The distal extremities of all the longitudinal wing veins except the sixth are white scaled, and at these points the costal fringe is interrupted by light scales.

The proboscis has a dark colour except its tip, which is a light yellow.

The palpi have three almost equal white scale circles, one at the apex, another at the junction between the second and third segments of the palp, and a third at the junction between the second and third segments.

The antennae have black segments except the basal one, which has a yellowish hue. The segments are surrounded by long silvery white hairs

The head is covered with white scales inserted on a dark background. There are two prominent white frontal tufts

The nape is covered with brown scales

The thorax is covered with white scales and yellowish hairs inserted on a dark black background, and are so arranged as to show a median and two less distinct lateral longitudinal darker lines. The lateral aspects of the thorax are of a black colour

The abdomen is of a dark black colour and is indistinctly divided into segments by darker basal bands. It is covered with numerous long yellowish white hairs

The legs are black throughout

Anopheles Culicifacies.—The wing shows five yellowish scaled portions on the costa, the innermost being of very small size and the outermost apical in situation. The first longitudinal shows five small yellow scaled areas corresponding exactly with the similar costal areas. The second longitudinal has three light scaled portions, the two inner being situated at the transverse veins, while the outer is situated at the bifurcation of the vein and involves for a short distance both branches

The third longitudinal is dark scaled throughout except at its inner extremity

The fourth longitudinal has three light scaled areas, one towards its inner end, one at the situation of the transverse veins, and one at the point of bifurcation, the light scales being continued on the branches for a short distance

The fifth longitudinal has only one light scaled area on the main stem and one on each of its branches

The sixth longitudinal has one light scaled spot

The distal extremities of the posterior branch of the fourth longitudinal and the anterior branch of the fifth longitudinal are alone light scaled, and only at these points is the costal fringe interrupted by lighter scales

The proboscis is brown for the most part, but its point is yellow

The palpi have three small almost equal yellow scaled areas, viz., at the apex, at the joint between the third and apical segments, and at the joint between the third and second segments of the palp

The antennae have dark segments surrounded by long dark hairs and a few shorter lighter hairs. The basal and first segments of each antennae are of a yellowish colour

The head is covered with yellow and brown scales. The frontal tufts are not well developed

The nape is covered with brown scales

The thorax is covered with brown scales and yellow hairs on a dark background. There is a distinct median darker longitudinal line. The lateral aspects of the thorax are darker than the dorsal aspect

The abdomen is of a dark brown colour covered with long yellow hairs and divided into segments by dark lines. A median dark line running down the abdomen can be indistinctly made out. It is most evident in the anterior part of the abdomen

The legs are of a dark brown colour throughout, but show at the distal extremity of the tibia a small spot of yellowish scales

Anopheles Theobaldi.—The wing in this species shows six black scaled spots on the costa. The black spot on the centre of the costa is the largest. Two very small dark spots are situated at the inner end of the wing

The first longitudinal shows four dark markings corresponding with the four outer large dark areas on the costa. The third dark area on this vein from the outer end is almost always divided into three by the interposi-

tion of two small white scaled spots. The second longitudinal is for the most part white, but shows two black scaled areas on the main trunk and two dark dots on each of the branches.

The third longitudinal vein is white except for three small dark spots.

The fourth longitudinal vein has two long black spots on the main trunk and two small black spots on each of its branches. The fifth longitudinal vein has only one dark spot on the main trunk, three on its anterior branch and one on its posterior branch.

The sixth longitudinal vein has three dark spots.

The distal extremity of all the veins is light scaled, and at these points the wing fringe is interrupted by light scales.

The proboscis is black with a yellow tip.

The palpi have three white circles. The apex is white scaled, the second circle is at the junction between the apical and third segment, while the third white circle is at the junction of the third and second segments of the palpi.

The second segment of each palpi is covered by larger and longer scales than the other segments.

The antenna have black segments surrounded by silver white long hairs.

The head is covered with white scales inserted on a dark ground.

The long frontal tufts of white hairs are well developed.

The nape is covered with brown scales.

The thorax on the dorsal aspect is covered with white scales and hairs on a dark ground and is so arranged as to show a median and two lateral darker lines. The lateral aspects of the thorax are of a dark colour.

The abdomen is intensely black and indistinctly segmented. It is covered with long white hairs.

The legs are much adorned with white scales and differ in detail in the anterior mid and hind legs. The femora and tibiae of all legs are covered with dark and light scaled areas. The first tarsal segments too have numerous white spots. The distal extremities of the second and third tarsal segments in the fore and hind legs are white, but black as these points in the mid legs. The fourth and fifth segments in the hind legs are entirely white, while they are entirely black in the other legs.

(To be continued)

THE EFFECT OF THE SILTING UP OF A LOWER BENGAL RIVER ON THE PREVALENCE OF MALARIA, WITH SOME REMARKS ON THE SPLEEN TEST, AND THE REDUCTION OF MALARIA BY FILTERED WATER

By LEONARD ROGERS, M.D., M.R.C.P., I.M.S.,

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THE enormous network of rivets comprised in the delta of the Ganges and Brahmaputra frequently furnish examples of the shifting of the beds of streams and the diversion of considerable bodies of water into different channels, with consequent decrease in the flow of others. The general tendency, however, is inevitably to gradual silting up of the smaller rivers by the quantities of alluvium brought down in the rainy season, and this unceasing change cannot be without effect on the health of the districts

comprised within this area. Yet but little definite knowledge on the subject appears to be on record, although according to one theory the Lower Bengal Epidemic Malarial Fever, or the "Burdwan Fever" was attributed to these changes, a supposition which I have discussed elsewhere. A recent inquiry on the effect of the silting up of the Karatoya river on the health of the Bogra district may, then, not be without some general interest.

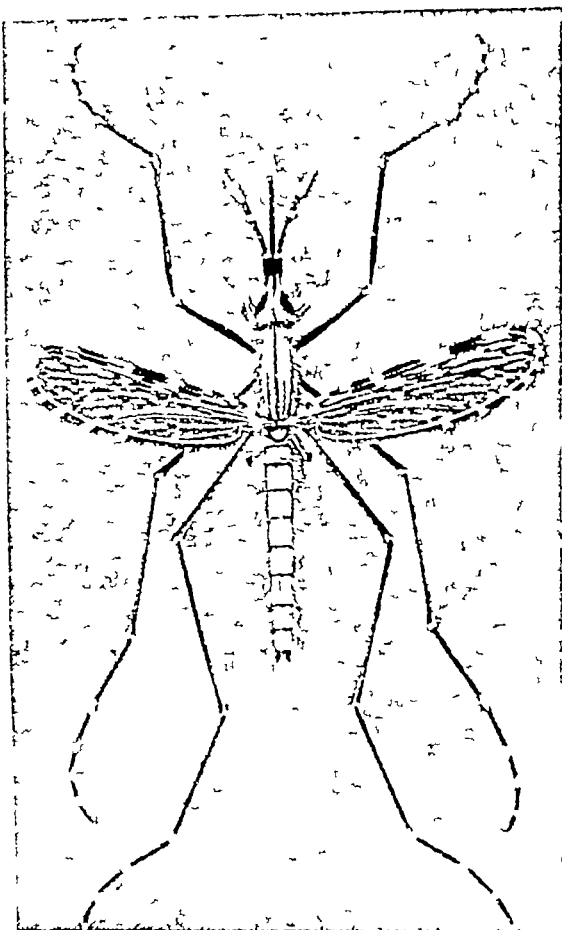
The present inquiry arose owing to the native inhabitants having submitted a petition stating that ever since the diversion of the main current from the Karatoya river into the Bergali about half a century ago the former has gradually silted up and has already become a source of great unhealthiness to extensive tracts on either side. This somewhat indefinite statement was on further inquiry supplemented by the additional information that the great unhealthiness had been "gradually increasing for the last forty or fifty years," in proof of which a list of villages was given "which are situated on the banks of the river, and most of which have almost been depopulated by disease. In others the number of inhabitants has been markedly reduced." Further it was said that the earthquakes in 1855 and 1897 had led to an upheaval of the bed of the river, and turned it in the dry season into "a stagnant and shallow canal," a description, however, which agrees closely with that of Hunter in 1876 as "a narrow, extremely shallow, and almost stagnant stream," so that there is no very definite evidence of appreciable recent change in the river.

On turning to the vital statistics I found that Bogra is the healthiest district in the Rajshahi division, while the death rate of the three thanas, through which the river runs, are almost identical with those to the west away from the river, as will be seen on referring to the accompanying map, although the order of the highest and lowest rates from north to south is reversed in the two cases. There was, then, no evidence of any special unhealthiness of the thanas, as a whole, through which the river runs, so that any deleterious effect must be confined to the immediate neighbourhood of the stream, and consequently would be easily found in the black list villages which had been furnished by the district authorities. Further, if the fever had been gradually been increasing for forty or fifty years, then one might have expected to have found the commencement of an epidemic malaria such as the "Burdwan Fever" or *kala azar*, which it would be of great importance to detect early so as to cut short the outbreak, and which might have been expected to have revealed itself in a large percentage of persons with big spleens and other symptoms of malarial cachexia. As, moreover, my inquiry had to be carried out in the month of February, which several years' figures of the fever attendance of the different hospitals of the district showed to be precisely the very month when malarial fevers were at their minimum, I had no hesitation in deciding that the spleen test would give the best indication of the relative prevalence of malarial fevers in different parts of the district, although blood films were also obtained from children, when possible, for examination for malarial parasites, a few of these only being obtained with considerable difficulty in three places where there were dispensaries in which the little operation could be quietly performed without exciting the suspicions of the people, a precaution which was specially desirable in view of the prevalence of plague in Bengal. The results fully confirmed my reliance in the spleen test.

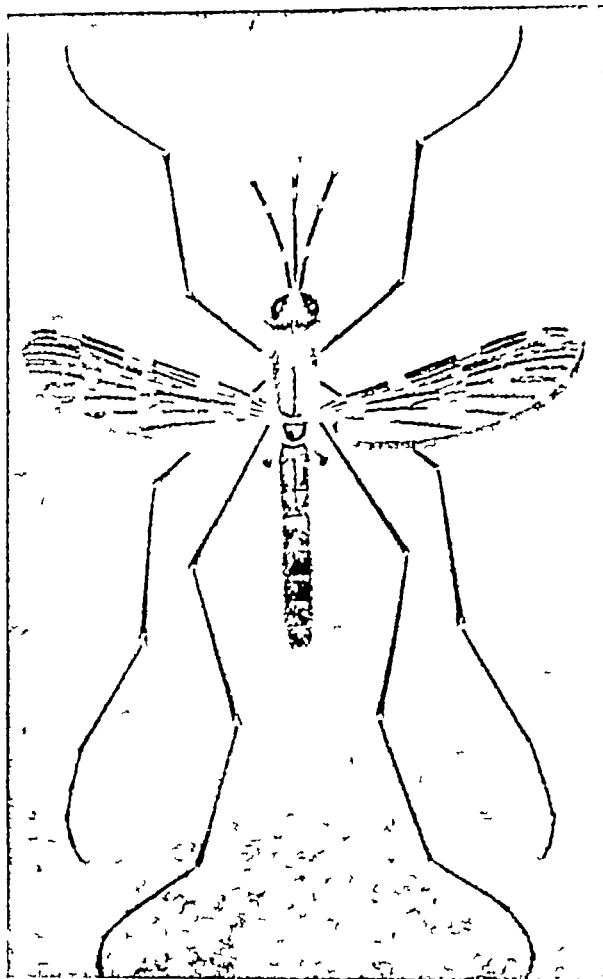
General results of the inquiry

Over 1,200 children were examined, and the results are embodied in the accompanying map. The number

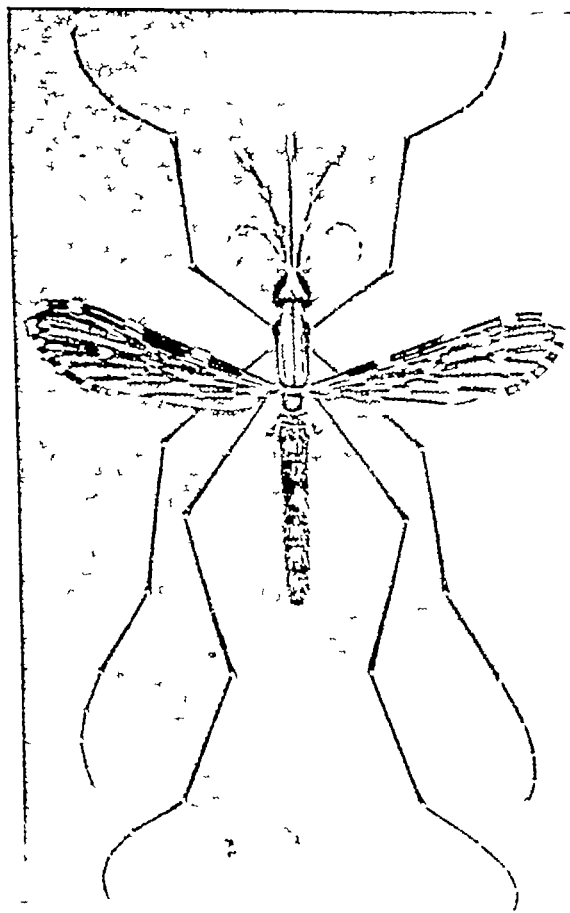
A YEAR'S EXPERIENCE OF THE HABITS OF ANOPHELES IN ELLICHIPUR
 BY CAPT WM GLEN LISON, M.B., F.M.S.



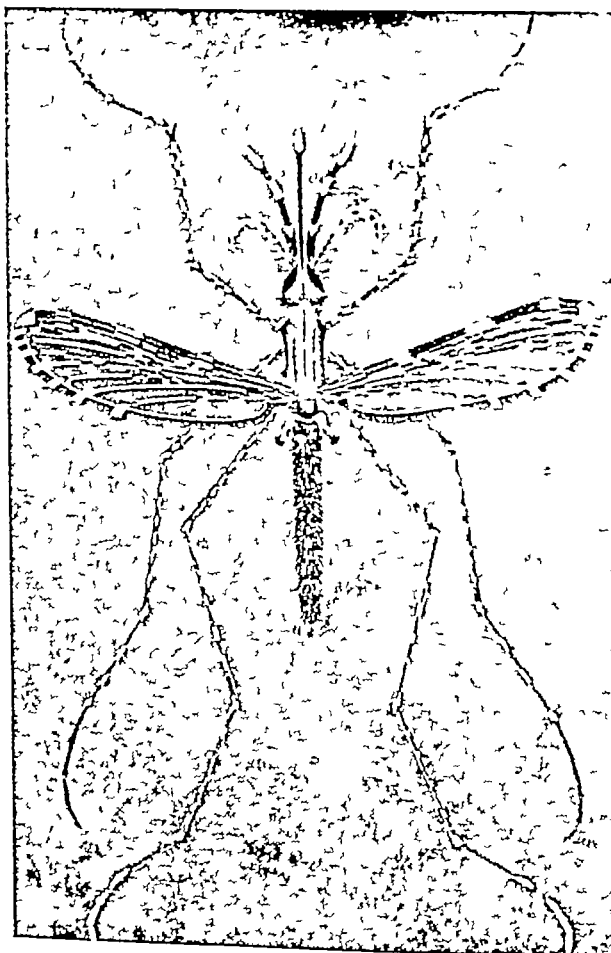
Anopheles Rossii



Anopheles Culicifacies



Anopheles T. sten



examined in each place is given, with the percentage of them who were found to have enlargement of the spleen, so that it could be felt below the ribs, placed below. The light and dark dots indicate the site of the villages whose inhabitants were examined. The dark dots represent the black list villages, and the light ones other control ones some of which are situated at a distance on either side of the river varying from three to thirteen miles. In the first place it will be noted that the spleen percentages are in no case anything like so high as I met with at the same season a year before north of Calcutta in all places at a distance from the Hooghly river which were dependent on tank water. Further in no place did I meet with more than a very occasional case of the tumid belly and wasted limbs which is so characteristic of an exceptionally severe incidence of malarial fever in Lower Bengal and Assam. There was, then, no evidence of an unusual prevalence of such a severe form of malarial fever as would account for a continued depopulation of the villages, while, as a matter of fact, one of these "almost depopulated" villages produced over a hundred by no means ill-favoured children, only 26 per cent presenting any enlargement of the spleen, and in half of these it was very slight, and in none did it even reach the navel. Yet this was the worst of the black-list villages north of Bogra town. The unhealthiness had evidently been greatly exaggerated, due apparently to the desire of the people to have the river opened up for purposes of trade.

Influence of varying rainfall on the fever death rate

Still there must have been some reason for the local belief in unusual unhealthiness of recent years, an explanation of which has been found in the influence of greater or less rain on the fever death rate, as will be seen from the following table—

TABLE I

Year	Rainfall in inches	Deaths from fever.
1892	62.01	5,688 +
1893	85.31	4,647 -
1894	74.69	5,051 -
1895	50.09	5,787 +
1896	48.43	5,770 +
1897	57.23	6,015 +
1898	79.09	5,090 -
1899	87.64	4,778 -

Average for eight years 68.05 5,326

Thus in 1893 and 1894 the rainfall was excessive, and the fever rate below the average. On the other hand, in the three successive years, from 1895—97, the rainfall was deficient and the fever rate in excess, the last of the three years being especially unhealthy, showing a cumulative effect of the abnormal meteorological conditions. Yet the unusually heavy rainfall of the next two years, 1898 and 1899, at once produced a progressive decline in the fever rate to considerably below the average. The three unhealthy years probably impressed themselves on the memory of the inhabitants and led to their petition, while the subsequent healthy one removed the evidence of the former excessive sickness before my visit. These figures have a further interest on account of the Bogra district being to the immediate south of Rungpur, in which I have showed elsewhere the present Assam epidemic malarial fever or kala azar took its origin, arising as a result of a succession of five out of six successive years of deficient rainfall, such as have not occurred before or since as long as meteorological records are available. It is easy to conceive that if the years 1898 and 1899 had also shown a markedly deficient rainfall that the already increasing unhealthiness of the Bogra district might have culminated in another such epidemic, so that these latter figures of a district adjoining Rungpur lend considerable support to my view as to the origin of kala azar.

Results of the spleen test

Although there was no evidence in Bogra of any general unhealthiness of exceptional degree for Lower Bengal,

nevertheless the varying spleen rates in different parts of the district are of considerable interest, and appear to me to throw some light on the important question of the effect of the closing up of the river some years ago on the fever rate of the tract through which it runs. In the first place it will be seen that the rates are higher along the course of the river than they are at a few miles distance on either side of the stream,—with the exception of the part to the east of Bogra town between the Karatoya river and another small stream which runs between this and the Bergali river through very low lying country, and in which the spleen rate of a village five miles to the east of Bogra was 27.5, or a little higher than that of the town itself. A second and still more important point is the steady increase of the spleen rate as we proceed from north to south along the Karatoya river. Thus, in the northernmost thana of Shibgunj 144 children were examined, all in black-list villages, but in only 22.2 per cent was the spleen enlarged. Six miles to the west of this point, in a large village on higher ground, only 11.5 per cent had palpable spleens, while 8 miles to the east of it the spleen rate was 13.5 per cent. Coming down to the town of Bogra, 13 miles south of Shibgunj, 25.1 per cent of 215 children examined had enlarged spleens, while at this level the rate five miles to the west was 23.8. Three miles south of Bogra two of the black list villages gave a rate of 41.9 per cent, yet in only one child did the spleen reach below the navel, nor did they, as a whole, show any marked signs of debility, although some of them presented the thin faces and limbs, which enable the experienced eye to at once detect a somewhat greater prevalence of malaria, which the higher spleen rate confirmed. Nine miles south of Bogra another black-list village gave a spleen rate of 36.2, while at Sherpur, 13 miles south of Bogra, the rate was 32.6 per cent. Thus the lower reaches of the river afforded villages with a considerably higher spleen percentage than the upper portions of the stream, while Bogra town itself had a rate intermediate between those of Sherpur in the south and Shibgunj in the north. There was one marked exception to this general rule, which furnishes the key to the cause of these variations. This was a village called Gokul, situated half way between Shibgunj and Bogra, in which only 10 per cent of 60 children examined had large spleens. The only peculiarity about this village was that although it was close to the river it was situated on distinctly higher ground than the surrounding country, the road running through it sloping down on either side. This instance proves that the elevation of the site of a village above the surrounding area rendered it less malarious, even when it is close to the river. Applying this principle, the whole of the facts noted above can easily be explained. Thus the places at a few miles distance from the river bank, on a slightly higher level than those near the stream have a low spleen rate, with the exception of the low lying small tract to the immediate east of Bogra town, which, as already mentioned, has a high spleen rate. In this way the somewhat greater fever prevalence along the low lying river is accounted for.

Of still greater importance and interest is the gradual decrease in the spleen rate from north to south along the river in throwing light on the effect of the diversion of most of the water from the Karatoya to the Bergali at a point to the north of the Bogra district some fifty years ago. Since that time little or no water has entered the upper reaches of the Karatoya during the eight dry months of the year, although there is a good flow of water in the rainy season. It is evident, then, that for the greater part of the year the amount of water in the Bogra portion of the stream will depend on the small tributaries entering it in its course through the district. Consequently there will be least water in the upper reaches, and most in the lower ones, or in other words the effect of drying or silting up of the stream will be

most marked in the northern thana and least so in the southern one. Further, the northern thana must be situated on somewhat higher ground than the southern to allow of the river flowing south at all, a very few feet making a considerable difference in the health, as seen in the case of Gokul, so that the lower spleen rate of the Shibgunj in the north than of Sherpur in the south, with intermediate rate in Bogra town midway between the two, is also readily explained on the same principle. We thus arrive at the conclusion that the most silted up part of the river is the most healthy one and *vice versa*.

This observation, however, only applies to the present time, and it does not follow that at an earlier stage of the process of closing up of the river exceptional unhealthiness may not have resulted from the change. On the contrary, it would appear to be probable that when the current in the river was first greatly reduced many years ago (for the fact that the earthquake of 1897 was followed by two years of exceptional healthiness coincident with heavy rainfall does not lend any support to the supposition that any material change in the stream took place at that time), there might have been a larger number of stagnant pools in the half empty river bed, during and at the end of the rains which would have formed good breeding ground for mosquitos, and have resulted in a temporary increased fever rate. Yet after a time, as drying up occurred, together with the slow rise in this delta, which is the primary cause of these alterations in the courses of such streams, there would be less stagnant water, and less fever, especially in the northern and most dried up part of the river, which would eventually result in the increased healthiness appearing in the upper reaches first, which is exactly what the spleen test shows has now occurred. If this conclusion is correct, it would obviously be inadvisable to attempt the opening up again of such a stream, from the health point of view, as this would only restore the former conditions, with the result that the inevitable slow rise of this delta would once more close the stream and again bring about temporary increased unhealthiness.

Thus the gradual rise of the deltaic tracts and the accompanying closing up of the smaller streams would appear to be ultimately beneficial to health, although a temporary increased unhealthiness may result for a time, and if this conclusion is sound, the principle will be applicable to other, and perhaps more important, cases than that of the Bogra river here dealt with, so that this question appears to be worthy of attention.

The spleen test for malaria compared with other suggested methods of estimation

Ever since Dr T E Dempster worked out the effect of the Western and Eastern Jumna canals on the prevalence of malarial fever by means of the spleen percentage in 1845 and published his figures in the Indian Annals of Medical Science under the title of "Notes on the application of the test of organic disease of the spleen as an easy and certain method of detecting malarious localities in hot climates," and of which Norman Chevers writes that Dempster's spleen test "can never be neglected without danger when new ground has to be taken up for Indian cantonments," it has frequently been used without question to determine local variations in the incidence of malaria. During the last few months its value has been called in question by two writers, who have each suggested a different alternative. As I tried both of these suggestions in Bogra simultaneously with the spleen count it will be of interest to compare the results, both to see if they agree with the old test, in which case they will prove its value,

and to decide which method is the most convenient and reliable in practice, while I will also take this opportunity to reply to certain criticisms by Lieutenant-Colonel Giles, which appeared in the *Indian Medical Gazette* after my reply to Major Ross was published.

Colonel Giles makes the astonishing statement that it will puzzle me to advance any anatomical evidence to show that the chronic enlargement of the spleen is the work of the malarial parasite. I need only refer him to the admirable lectures on malaria by Thayer, in which he will find several pages devoted to the subject headed "Changes following repeated or chronic infection" and beginning with the words "The spleen is always enlarged" (page 224). Further, the section on the "Anatomical changes following acute malarial infection" also begins with identically the same words, and the whole of the changes which I have repeatedly verified in both Bengal and Assam, are very clearly described again, as I pointed out last year, the number of anopholes breeding under standpipes in Calcutta are so few compared with those to be found elsewhere that they are practically a negligible quantity, and Colonel Giles' argument on that point does not apply to the area in which I worked. Even in the damp climate of Calcutta standpipe pools mostly dry up before any anopholes larvae in them have time to reach maturity, so that it is easy to exaggerate their importance.

The results of the examination of children's blood for the malarial parasites after the method of Professor Koch and Drs Christophers and Stephens were as follows. Films from 42 children in three places were obtained. All of them were under two years of age. In West Africa children of this age at Lagos were found to be infected in proportions varying between 50 and 100 per cent by the last mentioned observers, so that they found that it was only necessary to examine from a dozen or two children in order to estimate the amount of infection. Most of the children I examined had suffered from fever during the previous rainy season, so that it might have been expected that many of them would show infection. As a matter of fact, I only found the parasites in four out of the 42 specimens, and in two of these cases fever had been present within a few days of the blood being taken, and a third a month before, while the fourth had suffered from fever "after vaccination." This proportion was far too small to allow any conclusions being drawn from the results with regard to the relative fever prevalence in the places where the films had been taken, so that although this microscopical work took much more time and trouble than the examination of over 1,200 children for enlargement of the spleen, the practical result was nil. Possibly if it had been feasible to have carried out the inquiry in the fever season the results might have been different, but as both this and my Hooghly inquiry of last year had to be conducted in the minimal fever season this new method of estimating malaria was useless in them. Major Ross' criticism on this point, therefore, falls to the ground. No one who has followed the recent work in West Africa and noticed the many important points in which the malaria there differs markedly from the conditions met with in India will be surprised at the additional difference in the much less common infection of young children, in the minimal fever season at any rate, in India than in Africa. Of a like nature is the difference in the frequency of enlargement of the spleen on the two continents which Dr Daniels has recently pointed out. Nothing could more clearly show the difference between the distribution of the two forms of fever than the total absence of enlargement of the spleen in adults in Central Africa and its enlargement in over 70 per cent of adults found by me last year near Calcutta, and the apparently nearly complete immunity of men in Africa compared with the frequency of their infection in India, but we may await the experiences of the Malaria Commission in India on this point. At any

rate the comparatively rare infection of children in the cold weather mentioned above deprives the blood test of much of its value in this country, and proportionally enhances that of the spleen test as a simple and practicable means of estimating local variations in malaria.

It will also be of interest to compare Colonel Giles' method of estimating variations in the prevalence of malaria by the total death rate,—or more accurately by the fever death rate, as this will exclude such widely varying factors as cholera and small pox and "all other causes,"—with the results of the spleen test. In the following table the percentage of large spleens found in the towns of Sherpur and Bogra, in the riverine villages of Shibgunj and of Shariakandi, which is situated on a high bank of the Bergali river, are compared with the average fever death rates per mille for ten years in the thanas of the same names.

TABLE II.

Comparison of average fever death rates and spleen percentages

Area.	Spleen percentage	Average fever death rate
Shariakandi thana	10.35	17.6
Shibgunj thana	22.2	24.0
Bogra town	25.1	24.4
Sherpur town	32.6	29.4

This table shows such remarkably parallel figures that the only difference between the results of the two methods is that the fever death rates only afford evidence of the comparative malariousness of the particular areas for which the figures are available, which will only be for considerable portions of a district, whereas the results furnished by the spleen test can be applied to any given part down to a few villages, and it is hence an infinitely more useful and delicate test. I am much indebted to Colonel Giles for suggesting a method of estimating malaria which so completely proves the great value and reliability of Dempster's spleen test, as a guide to purely local differences in the prevalence of the disease.

Once more, I am indebted to Lieutenant Colonel King I.M.S., Sanitary Commissioner of Madras, for a copy of the minutes of his proceedings for the first and second quarters of 1900, in which he discusses my Hooghly report and points out that before it appeared he had previously found an increase in the amount of fever in one town after the introduction of a good water supply, while in four other towns there was a decreased fever prevalence under similar circumstances. With regard to one of the latter he writes "It is a curious fact that the introduction of water supply into Adoni—also with increase of moisture without removal of drainage—has been followed by a decrease of the fever rate. I may add that there can be no doubt that the fever of Adoni is chiefly malarial." These Madras instances prove that malarial fevers may be decreased by the introduction of a good water supply, while the Madras climatic conditions much more closely resemble those of Calcutta than do those of the North West Provinces in the absence of the extreme dry heat of the latter.

The effect of filtered water supplies in reducing the fever death rate in towns of the North West Provinces

Colonel Giles also discusses a table of figures from the Sanitary Reports of the North West Provinces, and concludes that "it is therefore undeniable that, in these provinces at least, municipal malaria has increased and not diminished coincidently with the introduction of filtered water supplies." The table gives only the figures of the average total death rate for different series of years before and after the introduction of filtered water supplies. Why the total death rates are taken when those due to fever were obtainable is not explained. No corrections are made for the very marked variations in the general health of the province in different years, such as the very unhealthy year

1894, or the latter famine years. Yet the total death rate of all the towns shows variations between one year and the next up to 60 per cent of the whole, and in separate towns of as much as 80 per cent. Such an increase, due to exceptional general unhealthiness, is sufficient to materially raise the average rate for several successive years after the introduction of a water-supply, and thus completely invalidate the figures in Colonel Giles' table, as occurred, for instance, in the case of Cawnpore. The question is such an important one that no apology is needed for a careful analysis of the vital statistics to determine whether the fever death-rate in the large towns of the North-West Provinces, since they have been supplied with filtered water, as compared with the previous five years, is greater or less than the average of all the towns of the province during the same years in each case. As the towns with water-supplies contain about one quarter of the inhabitants of all the towns with upwards of 10,000 inhabitants, of which the vital statistics are available, a very fair comparison can be made between the two classes. If the water supplies have increased malarial death rates, as Colonel Giles maintains, then both the total and more markedly the fever death-rates in each or at least in most of these towns must have been greater than in those of all the towns taken together, three quarters of the inhabitants of which have not got filtered water. The total death rate figures for the cantonments, which each contain over 10,000 inhabitants, are also supplied in my table. The reduction in the total death rate in the Allahabad cantonment, although the water supply is the same as that of the neighbouring town, which in Colonel Giles' table shows an increase, is of special significance in view of the fact that the supply was introduced in different years into the town and cantonment.

In the following table the figures of both the omitted cantonments and of Dohra (whose supply I believe is not filtered) are added to those of Colonel Giles' table, making ten places in all. In the first half of the table the total death rate figures are given, and the second half those of the fever death rate. The first two columns give the same figures as in Colonel Giles' table, while the third one gives the difference between those of columns 1 and 2, that is, the average increase or decrease in the total death rate since the introduction of the water supplies compared with that of the previous five years. In columns 4, 5 and 6 similar average total death rate figures of all the large towns are given for the same series of years in each case. By subtracting the figures of column 6 from those of column 3, we obtain the greater or less increase of the total death rate in each town since the introduction of the water supply as compared with the rates for the same series of years in the whole of the large towns. These figures are given in column 7, from which it appears that in six out of the ten cases the total death rate of the towns with the water supplies has increased less rapidly than in the whole of the towns of the province, while in four cases the increase has been greater, or, in other words, the general death-rate of all the towns, as a whole, has increased more rapidly than in the majority of those with filtered water, the same series of years being compared in each case. If then Colonel Giles' assumption that the total death rate figures can be taken as a guide to the death-rate from malarial fevers is accepted, the introduction of filtered water has, in the majority of cases, caused a decrease in the prevalence of malaria. However, the total death rates include those from cholera, small-pox and bowel complaints, while the proportion of deaths returned under the heading of "all other causes" varies very widely in different towns, and in the case of Benares in 1899 was no less than 45 per cent of the total death-rate, which shows what a rough guide the total death rate figures must be of the mortality from malarial fevers, so that it is worth while to examine the figures of the fever death-rates in a

similar manner to that adopted above in the case of the total death rates. These figures are given in the second part of the table for precisely the same periods in every instance as in the first part. In column 10 will be found the increase or decrease in the average fever death rate before and after the water supply was introduced, and it will be seen that in four instances there was an actual reduction in the fever rate, while in four others, the increase is comparatively small as compared with the total death rate. In column 13 will be found the parallel fever death-rate figures for all the towns taken together for the same periods in each case, from which it is at once evident that *there has been a greater increase in the fever death rate in all the towns taken together than in those with filtered water in every instance except that of Agra town.* The increase or decrease of

in a diminution of the general death rate." Such diminution will have an even more evident effect on the fever death rate, so that there is evidently good reason to believe that the relative decrease in the fever death-rate of the towns with filtered water, as compared with those without it (with one exception) which I have demonstrated above has actually taken place, is due to a reduction in the death rate from malarial fever. Still the question is too important for any assumption, however reasonable, to be accepted if it can be put to the test of facts, so we may proceed to inquire if there is any other common disease attended by marked fever, and so liable to be returned under this heading, which could have been decreased to such an extent as to account for the diminished relative death rates in the towns with filtered water supplies. *Post mortem evi-*

	TOTAL DEATH RATE FIGURES							FEVER DEATH RATE FIGURES							
	TOWNS WITH FILTERED WATER.				ALL TOWNS OVER 10 000 POP				TOWNS WITH FIL TERED WATER			ALL TOWNS			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Years with water supply up to 1899	Average death rate since the introduction of the water supply to 1899	Average death rate in the pre vious five years	Increase or decrease per millo of death rates	Average death rate in all the towns for the same period in each case as in column 1	Average death rate in all the towns for previous five years as in column 2.	Increased death rate per millo in all towns	Greater or less increased death rate in filter water towns than in all the towns	Fever death rates as in column 1	Fever death rates as in column 2	Fever death rates as in column 3	Fever death rates as in column 4	Fever death rates as in column 5	Fever death rates as in column 6.	Fever death rates as in column 7
Dehra	4	27.60	26.00	+1.60	40.36	36.73	+3.63	-2.03	20.13	20.36	-0.25	28.99	25.62	+3.37	-3.62
Meerut	4	35.06	32.13	+2.93	40.36	36.73	+3.63	-0.70	26.61	24.60	+2.01	28.99	25.02	+3.37	-1.36
Lucknow	5	43.79	44.68	-0.89	39.17	37.47	+1.70	-2.59	30.85	32.65	-1.80	28.15	26.61	+1.54	-2.74
Lucknow Can tonment	5	16.88	21.22	-4.34	39.17	37.47	+1.70	-6.04	13.43	13.22	+0.21	28.15	26.61	+1.54	-1.33
Cawnpore	6	47.83	41.17	+6.66	40.78	35.34	+5.44	+1.22	38.10	38.40	-0.30	29.04	24.74	+4.30	+4.60
Benares	7	48.81	39.99	+8.82	39.20	35.01	+4.19	+4.63	27.82	26.00	+1.82	27.70	23.70	+2.09	-0.87
Allahabad	9	28.70	25.77	+2.93	38.40	37.73	+0.67	+2.26	21.65	21.52	+0.13	27.12	26.71	+0.41	-0.28
Allahabad Can tonment	8	14.33	15.14	-0.71	38.64	37.67	+0.97	-1.68	10.04	12.37	-2.33	27.38	26.27	+1.11	-3.44
Agra	9	35.46	32.23	+3.23	38.40	37.73	+0.67	+2.56	26.55	23.89	+2.66	27.12	26.71	+0.41	+2.25
Agra Canton ment.	6	26.86	23.99	+2.87	40.78	35.34	+5.44	-2.57	21.28	17.08	+4.20	29.04	24.74	+4.30	-0.10

the fever death rates of the towns with water supplies compared with those of all the towns is shown in column 14, from which it appears that the relative decrease in the fever death-rate in four cases, as compared with that of all the towns, is more than 10 per cent of the whole fever death rate, namely, in Lucknow and Allahabad cantonments, Cawnpore and Dehra, in Lucknow the decrease is 9 per cent, and in Meerut 5 per cent. The case of Cawnpore is specially remarkable, for, while the total death rate shows relative increase of 1.22, the fever death rate shows a relative decrease of 4.60 per mille, showing how inaccurate it is to deduce an increase in the malarial fever death rate, from a small increased total death rate.

The final result of the analysis of the figures is that, while in four cases there has been an actual decreased fever death rate since the supply of good water, five out of the six remaining towns show a less increase of the fever death rate than do the whole of the towns, during the same period. This difference which would be still more marked if the fever rates of the towns without filtered water alone could be compared with those with the good water supplies. Now Colonel Giles writes that "it is impossible to imagine that any diminution in malarial fevers and splenic enlargement could fail to show itself

dence alone will furnish evidence as to the frequency of deaths from different kinds of fever, and as I know of no such figures for the North West Provinces towns I have analysed five hundred successive recent *post mortems* at the Medical College, Calcutta, where malarial diseases are at least as common as in the North West Provinces. The result is that phthisis caused more deaths than did malaria in all its four forms, while pneumonia and inflammations of serous membranes each caused about the same number of deaths as malaria, and these four, together with septic inflammatory affections, comprised more than 90 per cent of all deaths likely to be commonly returned under the head of fever. The relatively reduced fever rate following the supply of filtered water supplies must, then, be due to a considerably lessened death rate under one or more of these heads. Now it is a well known fact that phthisis is increased by increased dampness of the soil, so that the introduction of these supplies would tend rather to increase than to decrease this very common and fatal disease. Further, neither pneumonia, pleurisy, &c., or septic diseases are likely to be reduced by filtered water supplies. The only common cause of death from any feverish disease, a diminution of which could possibly explain the relative decrease in the fever death rate after the introduction

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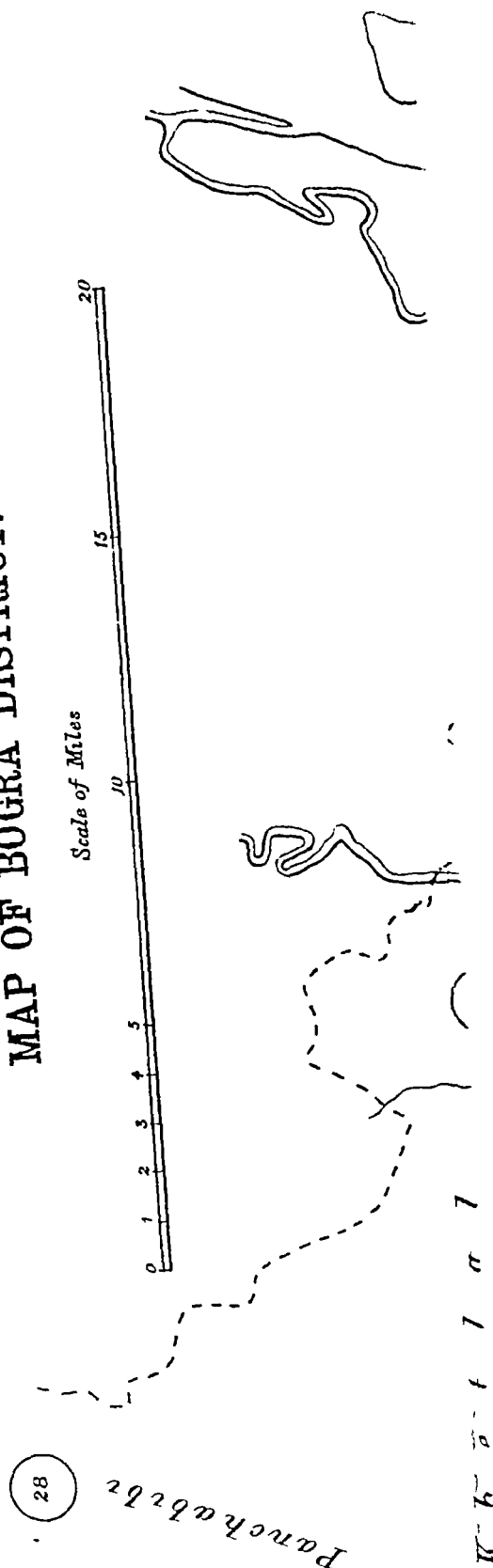
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The Indian Medical Gazette, October 1901

THE EFFECT OF THE SILTING UP OF A LOWER BENGAL RIVER ON THE PREVALENCE
OF MALARIA, WITH SOME REMARKS ON THE SPLEEN TEST, AND
THE REDUCTION OF MALARIA BY FILTERED WATER.

BY LEONARD ROGERS, M.D., M.R.C.P., I.M.S.,
Officiating Professor of Pathology, Medical College, Calcutta

MAP OF BOGRA DISTRICT.



of filtered water, then, is malaria, and the North West Provinces results amply confirm my conclusions with regard to the reduction of malaria, as judged by the spleen test, along the banks of the Hooghly wherever filtered water has been supplied, and thus indirectly confirm the accuracy of the spleen test itself.

One point only remains for consideration, namely, is there any special cause for the exceptional increase in the fever death-rate in Agra, other than an increase in the malaria? There is, for in the discussion on enteric fever among British troops in this town in the 1899 report of the Sanitary Commissioner with the Government of India, it is stated that "since the introduction of, in 1894, into cantonments of the municipal piped water, the number of admissions and deaths have more than doubled," while this fever is so much more fatal than malaria that a comparatively small number of cases would materially affect the fever death-rate, and every day the not infrequent occurrence of enteric fever in natives is being confirmed, while I have recently proved its presence is not at all rare among them in Calcutta. Further, that the increase of enteric in Agra is caused by the filtered water is proved by Mr Hankin having found the organism of the disease ten times in one year in the Jumna river close above the intake of the Agra supply, and also in the filtered municipal water supply in Agra every month from March to September 1899, and that, too, in spite of the well known great difficulty in isolating this organism from water. Once more the same bacteriologist has found the same organism in other filtered water supplies in the North West Provinces towns, so that there may very likely have also been some increase of enteric fever in them which would tend to mask the reduction in that of malarial fevers, and hence the latter may have been even greater than is shown in column 14 of the table given above. That enteric fever may be increased by supplies of water from Indian rivers with a large riparian village population is also suggested by the fact that the Calcutta water supply very frequently contains the bacillus coli communis, which is generally regarded as being derived from fecal contamination when found in water, and hence evidence of a possible, not to say probable, occasional presence of the enteric organism. This is a very serious matter, and certainly needs to be carefully excluded before any increased fever death rate in towns supplied with filtered water is attributed to a greater prevalence of malaria, especially in view of the now proved reduction in the latter disease consequent on the introduction of filtered water in both certain areas north of Calcutta, and in the large towns of the North West Provinces.

That it is not altogether easy to explain this reduction in the malaria in our present state of knowledge only enhances the value of the fact as an indication that we have still something to learn about malaria, in spite of the recent great advances. My Bengal observations only showed that the spleen rate was reduced by pure water, with doubtless a most beneficial result on the health of the people. The analysis of the North West Provinces figures proves that the malarial fever death rate is also reduced. It is difficult to see how primary malarial infections could have been reduced by the filtered water supplies, especially in the absence of drainage, but there can be no doubt that relapses are much more frequent than primary infections, and that they will depend largely on the general health of the patient. Any general hygienic cause, then, such as an improved water supply, may materially lessen the number of relapses. Further, it is certainly an exceptional event in India for a patient to die in his first attack of malarial fever compared with the numbers who succumb to repeated attacks, so that the death rate would be reduced in a still greater proportion by any general cause which lessened the tendency to relapses.

PARASITES IN ANOPHELES.

By GOPAL CHANDER CHATTERJEE, M B.,

Assistant Bacteriologist, Medical College, Calcutta.

IN dissecting a number of mosquitos for malarial zygotes, I came across a number of parasites which infest the mosquitos.

The mosquitos in question were all caught alive inside an inhabited house situated within a malarious region. They were dissected after an interval of 36 to 48 hours from the time they were caught. They were alive up to the time of dissection.

I found three varieties of internal parasites and one of external parasite, descriptions of which are given below.

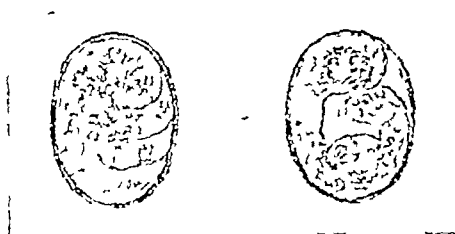


Fig. I—Organism found infecting the muscles of the head of anophelis (a) of Calcutta. Magnification, 75 diameters.

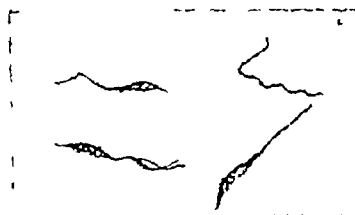


Fig. II—Organisms found in the stomach of anophelis (a) of Calcutta, stained with gentian violet. On the right hand corner is seen a flagellum separated from the body of an organism. Magnification, 325 diameters.

(1) In one mosquito described as species (b), Calcutta, in Giles' book on the mosquito (identified by Drs. Christopher and Stephens of Malarial Commission) I found five live filariae under the following circumstances.—On separating the head with the proboscis from the thorax, I noticed a worm wriggling about in the salt solution. On examination by low power of a compound microscope, it was found to be a filaria. It was found enclosed in a sheath. It remained alive in the salt solution for nearly an hour. On examining the proboscis, I was surprised to find a number of worms (at least three) wriggling about inside the labrum of the proboscis. Their inner ends were found curled up inside the pouch of the hypopharynx. Their outer ends were seen to reach down to near the tip of the proboscis. Their movements suggested as if they were trying to get out of their confinement. After the lapse of a few minutes, I observed one of them actually coming out of the proboscis through its outer end and becoming free.

I examined the stomach, salivary glands and the thoracic muscles, and I could not find any more filaria. On examining the abdomen carefully, which with the malpighian glands and ovaries had been separated from the stomach, I observed a filaria moving about near the malpighian glands. After a short time, it came out through the anus and became free.

These examinations were made without the application of a cover glass

This observation confirms the view of Captain James, *i m s*, that mosquitos of genus *Anopheles* are an intermediate host for *Filaria*, and the actual observation of a *Filaria* coming out by its own motion through the proboscis goes a long way to prove the theory put forward by Dr Bancroft and Dr Low, that the *Filaria* gets into the human circulation directly from the proboscis of a mosquito at the time of biting instead of through the circuitous way of water

(2) The second variety of organism which I found inside a mosquito is one which in some respects resembles the surra parasite. I found it in dissecting the stomach of an *Anopheles* belonging to species (a) of Calcutta of Giles. On examining by low power, I noticed the particles of disintegrated blood inside the stomach, moving very violently. On examining by high power I could make out numerous organisms moving across the field with lightening rapidity among the particles. After a little time their movements slowed down, and I could make out the structure of the organisms. They possess a flagellum and an oval body. The flagellum is fine and long,—it is longer than the body. Figure II is a fair representation of the organism. They stained readily with aniline dyes (gentian violet and fuchsin).

(3) A third variety of organism I found in *Anopheles* (a) of Giles. I examined in all twenty of them. In fourteen of them I found the organism. Figure I is a drawing made when it was alive and moving. It was found in the tissues of the head. I think it infected the muscles connected with the head. In all the preparations the organism was observed to move inside the capsule surrounding it. I do not know the nature of the organism.

(4) The fourth variety of organism which I found is an external parasite. I found it situated on under surface of the thorax of *Anopheles* (a). It resembles the mite described in *Indian Medical Gazette* of 1900 (page 129, Fig II) by Captain C F Earnside, *i m s*.

I beg to add that Captain L Rogers, *i m s*, Professor of Pathology, kindly gave me permission to publish the above article

THE TREATMENT OF SNAKE-BITE BY CALMETTE'S ANTIVENENE

By A. SCOTT REID, M B,

COLONEL, *i m s*,

Administrative Medical Officer, Central Provinces

ALTHOUGH the efficiency of Calmette's antivenene, as an antidote to the venom of snakes, has been proved up to the hilt by physiological experiments on animals conducted in the Pasteur Institute at Lille and elsewhere, the number of clinical cases reported in which the remedy has been used with success in man, have been, up to date, comparatively few, and, in all, or nearly all, there has been some doubt as to the identity of the snake which inflicted the bite, or as to the fact of a lethal dose of poison having been received. It was therefore primarily with the object of obtaining more accurate data in these respects, that, towards the end of 1899, I caused each of the police and charitable hospitals and dispensaries (branch as well as main) in the Central Provinces to be furnished with the necessary apparatus and a small stock of the antitoxin, while

I, at the same time, circulated full instructions regarding the administration of the latter, my ultimate hope being to establish a case strong enough to enable me to recommend a more extended application of the treatment through the agency of Police, Forest and other officials, whose duties call them into regions far removed from medical aid, and where opportunities for using the serum are liable to be met with at any moment. Although not Utopian enough in my ideas to anticipate that the final results would, under the most favourable auspices, make any appreciable difference in the total provincial aggregate of deaths from snake-bite, I could conceive nothing in the way of treatment more satisfactory to medical or laymen (for the hypodermic method of injection is simple enough to be learnt by any one of ordinary intelligence) than to possess the means of, here and there, saving a human life otherwise doomed, and nothing more calculated to make a favourable impression on the native mind. No one, however, who has not tried can realise the difficulty of collecting reliable and accurate data when one has to rely for such on the assistance of subordinates imperfectly trained in methods of observation, and many of whom hardly possess even the literary ability of recording, in an intelligible form, what they have actually seen. There is besides the *vis inertiae* opposed to the introduction of new measures to be overcome, and a notous tendency of the Oriental imagination to contend with

The first case to come to my notice was the one which was published in the January number of the *Indian Medical Gazette* for 1901, and for the particulars of which I was indebted to Mr Hogan, Civil Medical Officer of Mandla, in which district the occurrence took place, and under whose care the patient was finally placed. There the usual difficulty existed as to the identification of the snake, and also, as I pointed out, a doubt as to whether the man had received a lethal quantity of venom, in view of the length of time he had survived before the specific treatment was commenced. At page 12, paragraph 47 of my Annual Sanitary Report for 1900, I briefly alluded to six other cases which had been reported to me as having been treated by Calmette's method during that year, but of which the history was also incomplete as regarded the identification of the snake, and in which many other points, which ought to have been noted, were neglected. Had the reports been submitted to me at the time, as requested, instead of being held over to the end of the year, I might have been able to elicit more satisfactory information. From a perusal of the data which reached me, I have, however, little doubt that all the cases were genuine ones. Four recovered and two proved fatal, and a possible explanation of the failure of the serum in the latter is suggested by the Civil Surgeon in the probable fact that the persons had been bitten by Russell's viper, a very common snake at the time, and whose venom is said not to be amenable to the action of the antitoxin, *vide* Allbutt's System of Medicine, Volume II. In connection with this point I observe that, according to the report issued by Major R W Lyons, *i m s*, of the results of his visit to the Pasteur Institute at Lille, Dr Calmette does not appear to make use of the Daboin in preparing his mixed venom for immunising the horses from which the serum is obtained.

I will now proceed to give the details of a recent case which I venture to consider is, in essential particulars, one of the most complete yet published. The information was forwarded to me by Dr T W Quinn, Civil Medical Officer of Damoh, at the head quarters of which district the incident occurred, but who himself was not present on the occasion —

At 8-15 P.M. of the 4th July 1901, Mossum Chanhoo, male, aged 20, sweeper in the employment of Mr R —, Sub divisional Officer, Public Works Department, brought to his master a dead pigeon he had just then found lying under the cot in the compound, and which is said to have been at the time warm and bleeding slightly from a wound in the head. As three other birds had been found dead in the same spot that morning, having apparently fluttered out during the night and died, the man was told to remove the survivors at once, which he proceeded to do. The sweeper, however, immediately returned holding out a bleeding left forefinger, and saying that, while carrying out the order, he had been bitten by a snake which he had seen. He was at once hurried off to the Main Dispensary, distant 600 yards, by Mr B — Head quarters Police Inspector, who happened to be present, and who, on the way, bound the injured finger with a pocket handkerchief and, while passing the quarters of the Hospital Assistant, shouted to him to come immediately, as there was a case of snake bite to be treated. The medical subordinate, on examining the patient, found two punctured wounds on the terminal phalanx of the left index finger which was swollen and covered with blood. He then placed a ligature, which was retained for 24 hours, above the bite and scarified the part, rubbing powdered permanganate of potassium into the original and additional wounds thus made. Next 10 c.c. of Calmette's antitoxin was injected into the subcutaneous cellular tissue of the flank, with antiseptic precautions, viz, washing the skin with soap and water followed by boric lotion, while the syringe was at the same time sterilised with boiling water and similar solution, the time which had elapsed between the bite and moment of injection having been 33 minutes as calculated from the distance and necessary delays. The patient had complained of a sense of giddiness on admission, but this symptom subsided after treatment, and no further sign of constitutional poisoning manifested itself, although the case was carefully watched until four the next morning. The man was discharged after three days' detention. Sharply demarcated sloughing followed at the site of the bite extending in area to the size of a four anna piece and in depth almost to the bone. The subsequent ulcer took a long time to assume a healthy action, and at the date of my latest information, 4th August (a month after the bite) had not quite healed, notwithstanding repeated applications of Cupri Sulph. I feel sure from the circumscribed nature of the sloughing that it was not due to strangulation by the ligature, although the latter was kept on for an unnecessary time. The figures on the box containing the serum and indicating the date on which it had been drawn from the horse were 7th March 1900. It was obtained from Messrs Kemp & Co, Bombay, on the 16th March 1901, but how long previously it had been kept in this country I cannot say.

While the operations described above were in progress, Mr R — proceeded to the pigeon cot with a lantern, and inside it found the snake, which he shot. It had since then been sent to me in spirits, with a young pigeon which had been found in the stomach, and proved to be the non-spectacled variety of the *Naja Tripudians*, measuring $3\frac{1}{2}$ feet (probably a little more when alive as the body had been cut in two by the shot and part of it blown away) with the glands and fangs intact.

The only possible unfavourable criticism which I can see as to the efficiency of Calmette's antivenene in this case is that the snake may have partially or completely exhausted its venom on the last pigeon killed, for the

bird had apparently died within the previous two hours, as the sweeper stated that he had examined the cot at about 7 P.M. and found all correct. The warmth of the body in an atmospheric temperature of about 100° , and the oozing of blood from the wounds do not count for much. The fact of the three pigeons having been killed in succession the previous night, however, goes against this theory, and a much stronger incident with the same import recurs to my mind. In 1874, while I acted as Honorary Secretary to the Mess of my regiment, the *Lhansanah*, who kept a *moorghu Lhana*, containing fowls of every description, one day brought for my inspection a large basketful of dead birds, certainly not less than a dozen, and comprising as far as I can recollect, one or two turkeys and several guinea fowl. His story was that during the night he had heard a great commotion in the *moorghu Lhana*, and on opening the doors in the morning found the catastrophe I have described, his theory being that the unfortunate birds had been blown upon by a cobra which had been seen several times in the compound and whose habitat in a hole was known. I had several of the fowls plucked, and in each discovered the characteristic punctured wounds with a surrounding area of extravasated blood. Probably the snake had gone in search of eggs or young birds, and being attacked by the parents had struck out all round. It is thus obvious that a venomous snake does not always exhaust all its venom in one bite, and it would seem to have the power of regulating the quantity ejected with relation to the object it attacks. Had a human being been bitten after the first fowl, I have little doubt that he would have received a lethal dose.

In the case under report I regard the giddiness which was complained of as an indication of constitutional poisoning, for I find it given as one of the first symptoms in several of the other cases referred to in the beginning of this article. Dr Quinn states that the sweeper is by no means a nervous individual, but that, on the contrary, he was quite cool and collected after being bitten. The swelling of the finger was, in my opinion, due to local action, for the handkerchief used by Mr B — is a ligature could hardly have entirely impeded the circulation. Further evidence in this direction was afforded by the circumscribed and deep sloughing, a feature which was noted also in the case published by Mr W Hanna, M.B., and Captain George Lamb, I.M.S., in the *Lancet* of 5th January, 1901.

P.S. — Since writing the above I have received from Captain G. Lamb, I.M.S., of the Plague Research Laboratory at Bombay, the following reports of the standardisation of a sample from the batch of serum which was used in the Damoh case, and of the result of an examination which he kindly made of the poison glands of the cobra concerned. It is interesting to note that, if the conclusion arrived at be correct, the snake had apparently injected all its available stock of venom into the man.

"1 Standardisation of a sample of Calmette's serum received from Mr T W Quinn, L.R.C.P., Civil Surgeon, Damoh, C.P.

The serum was dated 7th March 1900 it arrived in Bombay on 11th December 1900, and had been sent to the Central Provinces on the 16th March 1901.

The method adopted for the standardisation of this serum was the method described in the *Lancet* of the 15th June 1901

The test dose employed was ten lethal doses, for a rat, of pure unheated cobra venom, viz, 0.4 milligramme

Rats of 115 to 118 grammes were used. The venom and serum were mixed *in vitro* and allowed to stand at the laboratory temperature for half an hour. All injections were made subcutaneously in the hind leg.

The following was the result obtained —

Animal	Amount of venom in milligrammes	Amount of serum in cubic centimetres	RESULT.
Rat 1	0.4	0.5	Died 4½ hours
" 2	0.4	0.6	Died in 20 hours
" 3	0.4	0.7	Ill, but recovered
" 4	0.4	0.8	Slightly ill, but recovered
" 5	0.4	0.9	No symptoms
" 6	0.4	1.0	Do
" 7	0.4	1.1	Died 1½ hours

From this series of experiments we can conclude that 0.7 cc of the serum neutralised 0.4—0.035 milligramme of venom. In other words, one cubic centimetre was able to neutralise 0.52 milligramme of pure cobra venom.

In the paper mentioned above it was shown that 1 cc of fresh serum could neutralise 0.73 milligramme of cobra venom. There has, therefore, been only a slight deterioration of the sample of serum which was examined now.

2 *Examination of poison glands of cobra sent by Colonel Scott Reid, I M S, as to the presence or not of active venom.*

The snake was killed on the 4th July 1901. It was at once placed in a large excess of methylated alcohol. The glands were examined by me on the 4th September. They had, therefore, been in alcohol for exactly two months. This treatment with an excess of alcohol would have the effect of precipitating all proteids present in the glands, and, further, of rendering the globulins and albumins insoluble on further treatment with water. Now cobra venom owes its toxicity mainly, if not wholly, to an albumose. It was therefore possible to ascertain if there was still left any toxic element in the glands of this snake. The glands were carefully dissected out from their capsules. They were then cut up into small pieces and well pounded with distilled water. This material was thrown on a filter. The clear filtrate was caught in a weighed platinum basin. The filter paper was well washed with distilled water.

The filtrate was then evaporated over a water bath at 60°C. By this means 6.3 milligrammes of material which had been dissolved in the water was recovered.

The following rats were injected with varying quantities of this residue —

Animals	Amount of residue in milligrammes	Result
Rat 1	0.05	No symptoms
" 2	0.1	
" 3	0.5	
" 4	1	
" 5	2	
" 6	2	

We can therefore conclude, in view of the fact that the minimum lethal dose of cobra venom for a rat of the size used in this series of experiments is 0.04 milligramme, that the glands of this snake contained no venom at the time of its death."

SOME NOTES ON THE "NORDRACH" TREATMENT OF TUBERCLE OF THE LUNG

By ARTHUR CASPERSZ, B.L.

HAVING had the advantage of residing for about six months, that is, four months in 1899 and two months in 1900, at a Sanatorium in England where the "Nordrach" treatment of tubercle of the lung is carried out with a good deal of success, I have ventured to put down in writing an account of the system in the hope that it may be of help to those who are attempting the treatment in India.

I have had no medical training and can therefore only write as one who has observed pretty closely about a hundred cases, sat at the same table, and walked and conversed with most of them. What I have seen has led me to believe that phthisis may be cured and not merely arrested in a great many cases, and that, although the aid and supervision of a doctor is most necessary, the patient by his own efforts, if he knows what to do, can prevent the disease from assuming incurable proportions if he begins soon enough and begins under favourable circumstances. The problem for Indian doctors to solve is whether this treatment cannot be carried out equally well in a selected Indian climate. I do not see why it should not be done.

I say, with some hesitation, that it is a doubtful kindness to apply the rigours of this treatment to patients who are long past cure. But why should the disease be permitted to become the fearful scourge it is? Consumption is not hereditary, and one explanation of its recurrence in families is the total disregard of sanitary precautions. It is a disease which results from poor living, over crowding, dissipation and taxing the resources of a weak constitution so as to render it a prey to injurious bacilli. First, then, the doctrine of good plain feeding and fresh air should be preached.

Secondly, precautions should be taken in every hospital or house where phthisical patients are found. Expectoration should not be allowed to dry and disseminate its poisonous germs. Sputum should be collected in vessels containing water, and persons who are attacked should carry a sputum flask. On the earliest indication of phthisis the sputum should be examined under the microscope, and the patient should at once undertake his treatment and order his life upon sound physiological principles.

It must be conceded, I fear, that the plains of India present many difficulties to the proper treatment of this disease except during the cold season, and although much may be done in hospitals, nothing like a real cure can be effected under the present conditions.

The problem then presents itself, what is to be done with a phthisical patient in India? The voyage to Europe may be very injurious to debilitated lung tissue, if the patient happens to be a bad sailor, but it has to be undertaken because there are no Indian Sanatoria. It is conceivable that, in a private house or hospital, a patient may make good blood, and gain weight, and stimulate processes of recovery in the lung. It is even probable that slight lesions may be cured by prompt and thorough treatment in the plains. But the dust and heat of the plains are formidable enemies, and exercise is nearly impossible. Climate itself is only a factor in the cure, but it is a very important one.

I will now try to discuss the "Nordrach" system from the point of view of one who is not a doctor, but who may claim to be an intelligent observer, and one who has actually lived the life of a patient.

The first thing to recognize is that the disease must be taken in hand early. The patient always has his warnings, and it is for the doctor to speak with no uncertain voice at the earliest approach of this dreadful malady. To tell the patient that he is delicate, or should take a holiday, is not enough. The lines of treatment should be well known to all medical men, and even in the slightest cases a proper sanatorium treatment should be gone through directly a hemorrhage comes on, or bacilli are discovered, or an ugly cough makes its appearance. Two or three months of proper treatment very often suffices at this stage, and from this treatment the patient has learned how to live in future. Every month of indifference that elapses makes the ultimate possibility of a cure more remote and makes the treatment itself infinitely more painful, repugnant, and difficult. The encouraging feature of the "Nordrach" treatment is that if the cure is applied early, the patient often becomes a stronger man than he was before, and can return to his life's work if he is careful.

Tubercle of the lung implies a destructive inflammatory process arising from the irritation caused by the tubercle bacilli, the form and numbers of which are readily recognized under the microscope. The approach of the disease is usually heralded by attenuation or loss in weight, a rise in temperature, sometimes slight, sometimes very considerable, a loss in appetite, perhaps a hemorrhage and always by general debility, and some degree of cough.

It has been recognized in Germany for many years that three factors are of the highest importance in stimulating recuperative processes:

- (a) Food
- (b) Fresh air and sunshine
- (c) Quiescence or carefully graduated exercise

At the Nordrach Sanatoria meals are taken three times a day only, that is 8.30 A.M., 1.30 P.M., and 7.30 P.M. The patient is visited by the doctor just before each meal, and his time planned out for him throughout the day. This medical supervision is of course the most important part of the treatment, but I shall attempt to indicate briefly the general lines upon which the treatment proceeds.

The patient takes his temperature in the rectum four times a day. First, while lying in bed in the morning; second, at about 11.30 or 12 o'clock immediately after exercise; third, at about 5.30 or 6 o'clock before the evening rest hour, and lastly, ten minutes after retiring to rest for the night. It should be here stated that a full hour's complete rest in the bedroom is imposed upon each patient before each meal, and that the amount of exercise allowed is regulated by the patient's temperature and general state of health. In case the temperature is high or rises unduly with exercise, complete or very nearly absolute quiescence is enforced, while the amount of nourishment taken is kept up to the highest point possible.

Food—(a) As regards the quantity of food which should be taken, this depends upon the capacity of the patient and his need for nourishment. Generally speaking, a man 5 feet 6 inches in height should weigh close upon eleven stone, and it is a fairly safe rule to go on feeding the patient as long as he can be fed and let him get every pound he can. The diet should be as solid as possible, and plenty of bread and vegetables should be taken. An imperial pint of milk should go with each meal, and this may be discontinued when the patient is practically cured or has gained all the weight that is required and can keep his weight without it. Milk is regarded as a reserve to fall back upon when the patient has to combat the troubles and disadvantages of his ordinary daily life. Were phthisical people, who have reason to apprehend a break down, to make a large quantity of milk a part of their diet, there would be fewer break-downs. Bread is an invaluable weight-maker, and every one should eat it generously. Meat is a more difficult thing to digest, but I see no reason why it should not be assimilated in large quantities in an Indian sanatorium in the hills.

The actual meals at Nordrach consist of something like this:

Breakfast—Is more or less left to the patient's discretion. A slice of meat or two eggs with a good quantity of bread and butter and jam, and an imperial pint of sterilized milk. Tea or coffee in addition if he wishes it. It is not a heavy meal.

Dinner—Two joints with vegetables, bread and butter, plenty of potatoes and greens. To finish with a milk pudding or a tart or some sort of nutritious pudding. One joint for instance would be beef and another mutton, one fish and another veal or pork. The helping depends on the patient's weight and condition, and, as a rule, the amount of food given is very large at first, and is proceeded with, although the patient may become sick or start diarrhoea. When a patient arrives weighing seven or eight stone the weight should increase at the rate of 4 to 6 lbs the first week and 1 to 2 lbs every week after, but these increments are often exceeded.

Supper—Is also a heavy meal, and very similar to dinner, except that only one joint is given.

To give some idea of the system pursued it is necessary to state that a patient frequently takes two hours over his dinner, and that no patient is allowed to proceed to the second course until he has finished the first. Every scrap of food in the plate has to be finished, and bread has to be eaten in due proportions, also vegetables.

In connection with this excessive feeding, which at first sight would appear to be contrary to commonsense, it is to be remembered that the bacilli are debilitated and destroyed by good strong blood, and that blood must be manufactured at any cost. The process by which the corpuscles of the blood encounter and overcome the tubercular bacillus is not for me to explain. It may be accepted as a fact. As the bacilli die down, the fabric of the lung gets stronger, new tissue is made, and expansion of air space proceeds. In this process, as will hereafter be shown, fresh air, quietude and gentle graduated exercise play a very important part.

I will assume that milk, meat, vegetables and bread are procurable, and that each patient takes as much food

as he possibly can. I may mention that very little medicine is taken. This over feeding requires immense resolution on the part of the patient and considerable firmness on the side of the doctor. Weight should be registered *before* breakfast once a week. Indigestion should be disregarded. It is an invariable symptom at first, and in very many cases entirely disappears as the cure progresses. Patients who have a high temperature and are confined to bed frequently put on two or three stone of weight in bed, and at last the bacilli are checked and decrease in numbers and a wonderful recuperation sets in. No doubt, general strength of constitution is what turns the scale, but it is the feeding that does the work. When the temperature has subsided exercise begins and is carefully regulated according to the effect of exercise upon temperature.

Fresh Air and Sunshine—(b) Fresh air is the heritage of every one in India, and sunshine is a far more constant quantity here than in Europe. Absence of high winds, which are very bad for the broken down lung tissue, is, I think, more readily obtainable here than in the variable stormy climate of the British Isles. No window should ever be closed. The furniture of the rooms should be of the simplest character and so arranged as to avoid dust. Curtains and carpets should be abolished. The floors should be of varnished boards, tiles or marble, wiped every day. Walls should be whitewashed frequently. The temperature of the house should be as far as possible that of the open air, and patients should be taught not to fear draughts or wettings. If a large amount of stimulating food is taken the patient rarely catches a cold. Colds are due to a microbe and are highly infectious. Therefore the sanitarium should be in a place removed at least a mile or two from crowded habitations, and the patient should not be allowed to go near towns, bazaars, or even villages where influenza lurks.

Something must here be said about dryness of air and elevation. Davos possesses a still cold dry climate, and Nordrach in the Black Forest has the same in a less degree, the rainfall there being considerable. It must now be taken as a fact that these cures can be effected equally well in the rainy climate of the British Isles and almost on the sea level. Dry air and elevation no doubt suit some cases, but the factor of dryness may almost be disregarded in the majority of cases, and elevation is only necessary to avoid malaria and secure a cool climate. Stillness of air and sunshine are very important, but the climate of the Mandips, with which I am familiar, labours under a disadvantage in these respects, and yet wonders are done there. What is far more essential is the assimilation of large quantities of food and the careful regulation of the walks. Pure air is absolutely necessary.

It will be admitted that it is far easier to live in the open air in India than in Europe. Even in the winter months in the Himalayas it requires less resolution to keep the windows open than to face the bitter air of the Swiss Alps, or the blizzards of a six months' English winter, and the "depressions" that hurry across the Atlantic. Every sane person would enjoy stronger health and live longer if the simple rules of hygiene were observed faithfully. I am disposed to think that the Himalayas or the Neilgherries, at an elevation above malaria, say 5,000 to 6,000 feet, are every whit as favourable to the cure of consumption as the health resorts of Europe or America. Climate in these cases takes a secondary place. I mean of course that the dusty plains and the alluvial flats of India must be avoided, but I do seriously think that patients need not go "home," and that a properly supervised sanitarium in the hills would work astonishing results.

Quiescence or carefully graduated exercise—(c) I come now to the most important part of the system, and the part which is the most difficult to explain—the necessity for quiescence and the necessity for exercise.

The ravages of the tubercular bacillus produce lesions or breakings down sometimes of a scattered character, sometimes resulting in the complete destruction of a large area of air space. It is obvious then that the diseased and crippled lung should be most carefully handled, that expansion of the sound portions should be promoted, and that Nature should be allowed and assisted to form fresh fibrous tissue, to fill up the cavities, and to strengthen the general lung structure.

In carrying out these ideas temperature has been found to be a most valuable guide.

Temperature varies in different people, and the temperature of phthisical people varies enormously, when exercise is taken, according to the degree of activity of the bacillus. It has further been found that the temperature of the mouth is a very unsatisfactory guide compared with that of the bowel, the reason being that in the latter case the thermometer is completely enveloped and is not affected by the temperature of the surrounding air. The idea is of course repugnant, but when life is at stake, and it becomes essential to register delicate differences of temperature and to base the treatment upon these differences, commonsense ought to prevail.

The bowel temperature is, therefore, adopted at the Nordrach Sanitaria, and the thermometer is kept in position for three minutes four times in the day.

Take the case of a healthy person first of all. After a good night's rest and before rising from bed the bowel temperature will be about 97.5 Fahr, or 36.4 centigrade. It may be as low as 97.1 Fahr 36.2 c, or as high as 97.8 f = 36.6 c. After dressing and moving about the room the temperature should be about 98.4 F, or 36.9 c. Generally speaking, while performing the ordinary sedentary occupations of life, sitting in office or at meals, or moving quietly about, a healthy person's temperature will be about 98.7 f or 37.1 c taken in the bowel. Should that person play three sets of tennis or cycle ten miles he will be surprised to find he is 99.7 F = 37.6 c, or even 100 f or 37.8 c, but it will come down in ten minutes or so to normal or 98.4 f or 98.6 f whatever his normal temperature happens to be.

Now take the case of a phthisical patient—one known to have phthisis. I have explained above that under the Nordrach system the temperature is taken four times in the day. The following rules are adopted.

If the early morning temperature be fairly below 98.4 F the patient is allowed to get up. A patient who is allowed exercise to any extent should have a morning temperature of from 97.2 F to 97.8 F. Should it be above the latter figure when lying in bed in the morning, it is generally a sure sign of active bacilli.

The next thing to observe is the effect of exercise, slight or prolonged. Assume the patient is 97.5 or 97.6, he gets up, and eats his breakfast, and about 9.30 A.M. starts walking slowly. If the effect of any exercise raises his temperature up to 99.7 F it is an indication that he has done quite enough, and he must regulate his walk accordingly. If he finds he can walk one mile without getting a temperature higher than 99.7, let him try and walk two occasionally—and so on.

But the history of all the cases is at first very short and very slow walks, say a quarter of mile, gradually increased, and if the case goes on favourably the distance generally is increased to several miles with great benefit to the patient until all abnormal sounds disappear, and the bacillus can no longer be discovered under the microscope. But the walks should always be very slow, and the patient should sit down if tired.

Assume then that the walk, a very slow one and partly uphill, has been taken, and the patient returns home about 11.30, takes his temperature before it has time to go down, marks it in his chart and rests until dinner. In the afternoon he may be ordered to keep very quiet or to walk a little distance, but always remains in the open air till 5.30 or 6 P.M. when he takes his temperature again. Temperature is usually highest

at this time of the day, and should it be higher than on the last occasion it is a sign that too much has been done. It should, as a rule, be not above 99° F.

Then the last thing at night the temperature should be when lying in bed about or below 98.4° F.

Each case of course requires careful watching and a separate treatment, and the patient will soon learn to regulate his life, but the thing to observe is that the variation between early morning temperature and that after exercise should be not more than 2° or 1½° Centigrade, that the temperature should be fairly below normal early in the morning, and that anything above 100° F after exercise shows over exertion. Within these rules it is tolerably safe to go.

There remains one matter which has rigorously to be attended to. No expectoration should be allowed about the grounds of the house or even on the roads, and no handkerchiefs should be allowed. A flask half full of water should be carried about and used for sputum, and the sputum should, in the bedroom, be collected carefully in a basin of water. As the sputum dries, a fine dust of a highly infectious character is thrown off, and other people's lives are imperilled. It should be made a criminal offence to disregard these simple precautions.

The sputum should be bacteriologically examined about once a month. As the treatment progresses (if the case is a curable one) the bacillus will come down from innumerable numbers to 10 or 5, or finally 1 or 2 in each field of vision. Ultimately it may not be discoverable, but it will not be safe to assume it is not there until a year or two has elapsed and none is found, and the doctor can hear no moist or abnormal sounds for many months.

I must guard myself from being thought in the above account, to have disregarded the necessity of regular medical supervision. It is always of the highest importance, but I have endeavoured to explain how a patient under favourable circumstances may do a great deal towards curing himself, and if consumption were boldly faced in its first stages and attacked on the above lines it would not be the fearful scourge it is. I want also to direct attention to the question of hill sanatoria in India.

I should like to add a few observations about the selection of a site in the hills for a sanatorium. The first requisite I should say would be a fair amount of tolerably level ground, say half a mile at least in more than one direction with gradually sloping walks. Precipitous hills are altogether too severe, as only a patient who is practically well should be allowed to negotiate a very steep slope. Hill climbing is a part of the treatment, but the hills should be very gradual. Then shelter from the wind is necessary and absence of dust. Pine trees are only an indication that the soil is well drained, and are grateful to the eye, and pleasant for their shade. The aroma of the pine is no element in the cure. Then the excessive tropical rainfall might retard some cures because it is difficult for patients to remain out of doors in such heavy rain. Therefore a place like Almora or parts of Kumaon which I have visited, where a high range of hills intervenes to break the monsoon deluge, would be preferable. I should say 5,500 feet would be the best elevation. Such sites are certainly to be found, and I would prefer Kumaon to either Darjeeling or Simla, which places I know well. The Neigherries, from what I hear, might be the best of all.

One important thing must not be forgotten. A mere knowledge of the system, invaluable as it is, must be subordinated to the presence and assistance of a competent responsible person, who takes the lives of the patients into his care, diagnoses each case, and applies the necessary stimulus. The presence of such a person implies the removal of all anxiety from the mind of the patient, and enforces the necessary discipline.

A History of Hospital Practice.

SWORD WOUNDS OF THE HEAD

By O. C. BARRY,

Captain, I.M.S.,

Civil Surgeon, Mandalay

DURING some years' duty as Resident Medical Officer at the Rangoon General Hospital I have had to deal with a very large number of sword or *da* wounds, some 300 to 400 a year.

The reason of this is that the city of Rangoon is a large and populous one, and the General Hospital not only draws its cases from this city, but also from an outlying district some hundreds of square miles in extent.

In the district nearly every Burman carries a *da* or sword, and in the city a very large proportion of them possess one in their houses. The Burman, moreover, is of a very excitable disposition and uses his *da* on small provocation, and when he does so, he uses it with his full force.

The *da* in use is commonly of two kinds: the one in every-day use for cutting jungle, chopping wood, &c., is square at the end and heavier and broader at the end than at the handle, and the other, used as a fighting weapon, is long, curved and pointed. Both are very powerful weapons, and with a little practice they can both be made to cut in a wonderful manner; in addition, also, both kinds of swords are kept very sharp.

As a consequence, a large and often a fatal wound can be inflicted with one good slash of a *da*. Sword wounds of the body and limbs have little of special interest, except that, as a rule, the operations for the repair of injury inflicted are long and tedious, including, as they often do, the wiring of divided bones and the suture of muscles, tendons and nerves, but it is sword cuts of the head and skull that are the most interesting, and which present the greatest difficulties in determining what line of treatment it will be best to follow.

Sword cuts of the head vary in many ways. Some may be glancing cuts, removing entirely a shaving of skull with its adherent scalp or a shaving of skull may be sliced off and left adherent by a flap of scalp, the shaving of skull, varying from any thickness up to that of the whole skull, or again the skull be cut through vertically with or without any accompanying depression of the skull. For practical treatment these injuries may be classified as below—

- (1) Complete removal of a piece of skull and scalp
- (2) Removal of a shaving of skull which remains adherent to a flap of scalp
- (3) Vertical wounds of the skull—
 - (a) partially through thickness of skull,
 - (b) completely through thickness of skull
- (4) Wounds accompanied by depression of the bone of the skull

1 As regards complete removal of a piece of skull and scalp as long as the piece of bone does not consist of the whole thickness of the skull the wounds usually may be dressed antiseptically and do not require any further operation. As a rule, they do well and in one or two cases examined *post mortem*, there was no fracture or depression of the inner table of the skull. When, however, the whole thickness of the skull is removed, the wounds are generally very severe and do badly, for the brain is almost invariably injured, and *hernia cerebri* and *meningitis* are common.

2 In these cases in which a shaving of the skull has been cut off and remains attached to its flap of scalp the wounds usually do well. Unless, as occasionally happens, the wound is very dirty, though, of course, the severity of the injury varies largely with the thickness of the skull cut off. In these cases also the inner table of the skull is, as a rule, uninjured.

It has been found best to re-adjust the flap, with its shaving of bone attached back into its original position with sutures through the scalp without further operation. But if, as sometimes happens, the shaving of bone is so bent and distorted that the flap will not lie smooth and flat back in its original position, the piece of bone should be trimmed up with bone cutting forceps till the flap can be made to lie easily and smoothly.

Again, should, as not infrequently happens, dirt have been so ground into the wound that it cannot be satisfactorily cleaned, it is, as a rule, best to remove the shaving of bone entirely from the flap thus ensuring thorough drainage, for it is often very difficult to allow for thorough and free drainage when adjusting a flap of bone and scalp, and should it appear likely that suppuration will ensue the shaving of bone is best removed.

3 By a vertical wound of the skull is meant a wound occasioned by a blow delivered at right angles to the curvature of the skull at the point of receipt of the injury. These wounds naturally occur chiefly on the vertex of the skull, but may occasionally be delivered laterally.

This class of wounds is especially important owing to the resulting injury to the inner table of the skull and also possibly as a consequence to the brain substance beneath.

These wounds may, for the purpose of treatment, be again subdivided into three minor classes—

- (i) Wounds in which the outer table of the skull is cut into, but not completely divided.
- (ii) Wounds dividing the outer table and cutting into the middle or cancellous table of the skull.
- (iii) Wounds completely dividing the skull.

It is in wounds of the above nature that the question of the operation of trephining most frequently arises, and it is often a very difficult question to decide. The following views have been arrived at after the performance of a considerable number of *post-mortem* examinations and is the result of numerous experiments on the dead body.

In the first place it is of great importance to estimate whether the blow was received at right angles to the curvature of the skull or not. Many blows, though struck vertically, on coming in contact with the skull, glance sideways, and whether this has taken place or not can almost always be determined by a careful examination of the wound itself.

Should therefore the blow be a glancing one, and should there be no grave head symptoms pointing to compression or severe injury of the brain substance, the wounds in Classes I and II, as a rule, require no operation and may be treated as ordinary scalp wounds exposing the bone of the skull. Should, however, the direction of the wound be at right angles to the curvature of the skull, wounds in Class I only may be left alone.

Those, however, in Class II under these circumstances require more thorough treatment, for there is almost

invariably fracture and communication of the inner table of the skull, and, as a consequence, not infrequently laceration of the brain substance beneath.

In wounds falling into Class III, I should always advise trephining and thorough examination of the wound whether the blow happens to have been actually vertical to the curvature of the skull or not. The inner table in these cases also is almost always comminuted and fractured, and till the wound has been thoroughly searched it is, as a rule, impossible to discover what is the true condition of affairs inside the skull.

In illustration of this point, I would mention a case happening recently. A Burman came to the hospital suffering from a *de* cut of the skull, $4\frac{1}{2}$ inch long on the vertex of the skull, just above and more or less parallel to the temporal ridge. The blow had apparently been delivered at right angles to the curvature of the skull. For the posterior two thirds of the wound the skull was cut clean through, for the anterior one third the skull was cut deeply into but not completely divided. The patient had no head symptoms and walked to hospital being, however, weak from loss of blood. A crown of bone was removed and the whole line of the wound cut along with the bone cutting forceps. Under the anterior one third of the wound was found a loose piece of inner table $\frac{3}{4}$ inch long and $\frac{1}{2}$ inch wide driven downwards and inwards through the *dura mater* and lacerating the brain substance. This, together with several small separated fragments of inner table, was removed. The patient, 14 days after receipt of the injury, was practically well, the temperature had only once risen above normal (just after the operation), the wound had healed up, and he had no head symptoms at all. It was hardly to be hoped so successful a result would have been possible had not the wound been thoroughly explored in the manner above described.

4 Incised wounds of the skull with depression of the bone should be treated as ordinary compound depressed fractures of the skull, and the depressed bone elevated, and, if necessary, removed. Two years ago, in quoting the notes of 26 operations for compound depressed fractures of the skull performed at the Rangoon Hospital by Captain Duer and myself, attention was drawn to the good results obtainable by a free removal of the bones of the skull as a means of ensuring a thorough knowledge of the condition of the inner table of the skull and the brain, and also for allowing for free drainage of the wound where necessary. The advantages of this free removal of bone have been fully borne out by subsequent cases. Several of the cases operated on have been seen at periods varying from one to three years after the operation, and the resulting inconvenience from the removal of even large areas of bone has been surprisingly small, and has in no case prevented the patient from following his previous occupation.

Should there therefore, in incised wounds of the skull, be any reasonable probability of the inner table of the skull being fractured and depressed it is, I believe, the best practice to operate at once and settle the question definitely.

The method usually followed has been to first remove a crown of bone with a trephine and then to quickly remove a strip of bone along the line of the incision in the skull with bone-cutting forceps (Stoffman's).

A probe bent at right angles is then passed along either side of the incision in the skull, and where fractured or depressed bone is felt more skull is cut away and the fragments of inner table removed and the condition of the brain thoroughly examined.

The scalp is then sewn up with sutures, and after extensive operations the wound is drained for 24 hours.

With the aid of powerful bone-cutting forceps, an operation of this nature can be quickly performed.

RUPTURE OF UTERUS (SPONTANEOUS?)

By C E SUNDER, M B,

MAJOR, I M S,

Civil Surgeon, Gaya

THE following case is published only on account of the extreme rarity of the presumed cause of rupture of which five cases are quoted by Baines, and only one of these is accepted as genuine by Herman. I am indebted to Dr Nicholl, of the East Indian Railway, for assistance at the operation.

Kabool Sheikh, Muhammadan, aged 20, was admitted into the Gaya Pilgrim Hospital on the 21st February at 10 A M, and examined by me at 11 A M. She was a primipara whose last menstruation was eight months ago, and who had been suffering from continuous pain in the abdomen for the last ten days.

Previous history—She is said to have been quite well when suddenly a severe continuous pain of a piercing character came on in the right hypochondrium. It was supposed to be labour pain, and an untrained native midwife was sent for who stated that labour had not come on and ordered fomentations and rubbing with oil. This was done for five days, after which the woman was taken to the Elgin Zenana Hospital, where she was treated as an out-patient by Miss McKenzie, M D (Brux), L M and S (Edin), who first saw her on 15th February, and who informs me that "the foetal heart sounds were heard, the os was not patent." An ounce of castor oil was administered, the urine being previously withdrawn. On 16th and 17th she was put on Pot Brom and Tinct opii, castor oil was repeated on 18th. She was brought on 20th. I could hear no foetal heart sounds, the os was patent, and there was a discharge of blood. Quinine pills were ordered of three grains each, and she was told to go to the Pilgrim Hospital, as she was not a *purdanashin*, and as she wanted to be admitted there. Miss McKenzie has since informed me that when first she saw the case the abdomen was distended and tympanitic, so that nothing could be felt.

Present state—Face pinched, eyes sunken, pulse thready and irregular, restless and groans in bed. Temperature 97°. After drawing off the urine the abdomen was seen to be uniformly enlarged and so tense that nothing was made out by palpation. The abdomen was tympanitic all over. The pelvis was of average size, and there was a free bloody discharge per vaginam. The vaginal culs were too tense for anything to be made out through them, but the cervix though long was soft, and readily admitted the forefinger, which could be insinuated over a well marked internal os into the uterine cavity. A boggy mass was now met with which was at first taken to be placenta prævia, but the finger could be swept round the internal os without meeting any resistance, and high up in front it came on the edge of a rent in the uterine wall. The abdominal cavity was entered, and the examining finger distinctly felt through the abdominal wall. Neither foetus nor foetal remains could be made out in the abdominal or in the uterine cavity. The diagnosis and treatment were obvious.

The patient was at once prepared for laparotomy. The vagina was again douched with strong Condy's lotion, the skin was cleansed with turpentine, washed, and a compress of 1 in 20 carbolic lotion applied over the abdomen. Food was refused, and therefore two tins of Brand's essence with an ounce of brandy was administered by catheter per narem. The patient was then put to bed with hot water bottles, and the pulse and general condition improved rapidly.

Operation at 2 P M. A median incision 2 inches long between umbilicus and pubes exposed the peritoneum, which was thick and purple in colour. On opening it there was an escape of foetid gas, and through the small opening a flake of white curd-like material was seen lying on what might possibly be dryish intestinal mucous membrane. It was suspected that an adherent coil of intestine had been laid open, but on further exploration the material proved to be *verruca caseosa*. The finger was passed down to the pelvis and the rent in the uterus identified. On enlarging the wound the hairy head of a foetus presented. It was easily delivered, and large quantities of putrid bloody fluid escaped with the foetus which was itself soft and purple from putrefaction. The cord was cut and traced to the placenta which formed a rounded mass bulging out of the rupture and loosely attached to the thick posterior wall of the uterus. It was rapidly removed, and the uterus drawn out of the wound until the lower portion of the thin anterior wall and the broad ligaments came into view. Dark blood, fluid continuing to escape, clamp forceps were applied to the two broad ligaments with good effect. Several jugs of warm sterilized water were poured into the cavity, apparently walled in with lymph, in which the foetus lay. This was continued until the water returned clear and loose shreds ceased to appear. It also seemed to stop oozing. Sterilized salt solution was now poured in and left in at the suggestion of Dr Nicholl. The clamp forceps were removed, an elastic ligature applied round the uterus below pins, and the upper portion of the uterus amputated. Several of our serrenoud wires broke, and could not be used. A collar of peritoneum was sewed round the stump and the peritoneum closed except where a Keith's tube was introduced for drainage. The wound was closed with silk worm gut taking up all the tissues. The dressings were of iodoform and alembroth gauze. The woman rallied from the operation very well, and when seen again at 7 P M was conscious and answered a question, but she was very restless. She died at 2 A M. This result was expected, the operation having been undertaken only as a last chance.

The doubtful point in this case is whether the uterus ruptured in labour or whether the rupture was spontaneous. From the 10th to the 15th February we have nothing satisfactory to argue from. The pain was sudden and continuous, and there was no show, so that the native midwife was probably justified in thinking that labour had not come on. On the 15th we know that the os was not patent and there was still no show. The foetus was living on this date either in utero or in the abdominal cavity. The treatment adopted was apparently at first for false pains, and on the 20th the quinine pills were probably intended to bring on labour or to control hæmorrhage. If labour had been in progress between the 15th and the 20th February, it must of course have been recognized. Uterine contractions seem never to have been observed but from the advanced putrefaction of the foetus, the state of the cavity in which it lay, so walled in with lymph and clot, that neither intestines

no momentum could be recognized, and the appearance of the ruptured uterine wall, Dr Nicholl and myself were convinced that the rupture had taken place at least a week previously, say, on the 14th February, when the foetus might still be living even in the abdominal cavity and the heart sounds be heard, as we are told they were. On the facts before us it would appear that the woman never had been in labour. The sudden onset of pain, the comparative thinness of the anterior uterine wall, the absence of any show of blood and of any impediment to natural labour, make it possible that this was one of the rare cases of spontaneous rupture occurring late in pregnancy. It was unfortunate that the rupture was not recognized earlier as, from the prolonged resistance to what actually did occur, it is very probable that early diagnosis and operation would have saved the woman's life.

SALOL IN SMALL-POX

By E S BHARUCHA, L M & S,

Assistant Surgeon

DR CHARLES BEGG, in a paper read before the Edinburgh Medico-Chirurgical Society on the 17th January 1900, related his experience regarding the beneficial effects produced in small-pox by the use of salol, inasmuch as it tended to, *first*, abort the pustular stage, *second*, diminish the irritability of the patient, and *third*, prevent the emission of unpleasant odour. His experience has been corroborated by Drs John Biernaki and P Napier Jones in a paper published in the *British Medical Journal* of the 2nd June 1900, page 1337. In their concluding remarks they state that "on the whole the statement is justified that salol affords a means of treating small-pox superior to the methods in vogue."

My attention was drawn to this subject by Colonel W G H Henderson, FRCSI, FMS, Civil Surgeon, at whose recommendation I was induced to try salol on my patients in the Sassoon General Hospital, Poona. I have up to date used it in eleven cases. Some of them were greatly modified by vaccination and no doubt would have done well even if the drug had not been used. But three of these cases were severe and of a confluent type, and the result they gave justify my stating that but for the use of salol they would have run a severer course than they actually did, and the illness would have been considerably protracted. In all of them, undoubtedly the pustular stage was aborted, and there was an entire absence of that characteristic unpleasant odour so familiar to all who have anything to do with the treatment of small-pox, but in none of these cases however was the irritability of the patient sensibly diminished.

Up to the time that I began the salol treatment I was in the habit of prescribing the

following lotion on the parts affected as soon as the vesicular stage was completed —

R			
Oil Eucalypti	m	5	
Calamine	dr	3	
Oxide of Zinc	oz	$\frac{1}{2}$	
Glycerine	oz	$\frac{1}{4}$	
Aqua Calcis	ad o	1	

Mix, to be gently applied with a camel hair-brush.

I have invariably observed it produce an immediate soothing effect, though it did not prevent the developing of pustules. Very often have I noticed the patients having had their first night's rest in the whole course of the disease after the use of this lotion. In all the cases treated with salol I was compelled to use the lotion against my will as I wanted to give that drug an independent trial. This leads me to believe that the cases treated only with salol would not have passed through the disease with so little discomfort but for the lotion, and I should think in combined treatment of salol internally and the lotion externally, we possess a means of treatment for small-pox which may be safely said to be perfect for all requirements. Salol might be given with the object of cutting short the attack, aborting the pustular stage, and thus altogether doing away with the secondary fever and all the attendant evils and discomforts of the same, and the lotion to diminish the irritability—a symptom which means constant scratching and consequent tendency to pitting of the skin, and, what is worse, unrelievable sleepless nights, bromides, morphia, &c, having no appreciable effect.

I prescribe salol in fifteen grain doses, three times a day, from the very first day of the appearance of the eruption and continue them undiminished till after the desquamation stage is completed. In no cases has there been any evil effect observed as a result of the use of this drug. I append a few notes on one of the worst cases.

Case I—T, age 20, European, Police Constable, was admitted on the 25th January 1901 in the general wards of the Sassoon General Hospital suffering from fever said to be of three days' duration. Temperature on admission 104. January 26th—temperature, 103.6 degrees Fahrenheit. Has some pain in the loins, and a suspicious papular eruption is noticed on the face and the body. He was consequently transferred to the infectious wards and put on salol treatment.

The rash continued to appear for the next four days in successive crops, having by that time become confluent on face, palms of the hand, and soles of feet. Was very restless during the whole of that period, and on the evening of the 31st, six days after admission, complained of great irritability, and was consequently put on the zinc and calamine lotion in addition to salol. The patient expressed himself greatly relieved after that, and since then improved rapidly. There was a slight rise of temperature on the next day which, however, soon subsided. Salol was stopped on the 15th February and by the 25th (exactly a month after admission) he had so far recovered as to be fit for discharge from the hospital.

THE
Indian Medical Gazette.

OCTOBER, 1901

COCAINE-EATING IN CALCUTTA

Our readers may remember that in January, last (p 31) we called attention to the spread of the pernicious habit of cocaine-eating among the inhabitants of certain districts of Bengal.

Recently we have had a special opportunity of studying this subject further, and have notes on some three dozen cases of cocaine-habitues with whom we have discussed the subject.

The readers of the daily newspapers in Calcutta are aware that prosecutions for selling cocaine without a license are a standing feature of the Police news columns, but it will probably be a surprise to many to learn the extent to which this habit has spread among all classes of the youth of this community.

In the Central Jail at Alipore there is a collection of some 200 youths, many of whom have three, four, or even five previous convictions, among these an examination showed no less than 37 habitual cocaine-eaters, and a visit to the neighbouring reformatory school enabled us to pick out some 18 more.

These boys belong of course to the criminal classes of this city, and are in every way typical products of the life in the slums of our big cities, but the vice of cocaine-eating is by no means confined to the criminal classes. We are informed that considerable quantities are secretly sold every day to *known* customers by the *pan* sellers.

The cocaine, as sold, appears, to be pure, or nearly pure, it is sold in minute paper packets containing half or one grain each, at the price of half or one anna respectively. At this rate it can be sold with a considerable profit. Many customers buy three, four, or even six packets daily, and several of the jail boys confessed to consuming much larger quantities, one boy, aged 15, stated that since he had been taught the habit he would gladly run the risk of theft to obtain it. The drug is seldom eaten by itself, but almost invariably along with the *pan*, the pleasure of which it is said to considerably enhance.

As regards its constitutional effects, it is agreed by all that it has a temporary euphoric effect,

followed by a feeling of reaction and depression but for the time being it gives a feeling of *bien être*, and a freedom from the pangs of hunger, which are only too dearly purchased by the subsequent depression.

But the temporary bad effects of this habit are not so serious as the hopeless slavery it induces. The habitues also drift into a cachectic state, and the sallow look, the sunken eyes, and the emaciated frame of the youthful cocaine-habitué from the Calcutta slums form, with the blackened teeth (to be presently described), a characteristic and even pathognomonic picture, which once seen is easily recognised.

This condition of the teeth of the cocaine-habitué has, as far as we have been able to ascertain, not previously been described in any medical publication, though it is well known among the consumers of the drug and to the Police Officers of Calcutta.

The teeth may or may not be otherwise sound, but they show a marked and characteristic blackening over their surfaces which contrasts strongly with the whiteness of the cutting edges. This blackening is most marked in the lower teeth, and extends to the last molars, and is even more marked and characteristically seen on the inner or posterior surface of the teeth. This blackening can usually be differentiated from that produced by dirt or by tobacco, and among a row of youths these black teeth will enable one, almost always correctly, to single out the cocaine-eater.

What the ultimate effect of prolonged eating of cocaine would be on the general health we have no personal experience, but when the habit is abruptly put an end to by admission to jail, the temporary depression effects are soon got rid of by good food and abstinence, and the cocaine-habitué rapidly gains weight again, sometimes even 10 or 14 lbs in a few weeks.

We understand that the Government of Bengal is doing all that is possible to suppress this vice, the fact that the drug is sold in such small packets renders concealment very easy, but there are few *pan* sellers who could not, if they chose, tell a tale of the extent to which it is sold. The drug is, fortunately from this point of view, expensive, but, on the other hand, half to one grain only is the dose required, and the criminal classes in Calcutta find little difficulty in stealing enough to enable them to indulge in this up-to-date most pernicious vice.

The worst feature of the sale of this drug is that the habit, like cigarette-smoking, has become only too common among the schoolboy and student class.

That the use of a new drug like cocaine should have, within the last few years, become common among the inhabitants of Bengal and the negroes of the Southern United States is a somewhat remarkable phenomenon, and one that should give us pause.

When we remember how anxiously and lightly the anti-opium agitators were pressing for the prohibition of that more useful and less harmful drug, the danger is manifest prohibit opium and here is a substitute ready to hand, and in flying from the Scylla of opium the anti-opium people would only drive the people of Bengal into the Charybdis of cocaine

LONDON LETTER.

THE TUBERCULOSIS CONGRESS.

THE British Congress on Tuberculosis has met and dispersed. It was a most successful gathering—successful from both the social and scientific point of view. The arrangements for the transaction of business were excellent, and the measures taken for the convenience and entertainment of members and visitors admirable. There was a good attendance, including a number of representative foreign guests. The opening ceremony was conducted by the Duke of Cambridge on behalf of the King who sent a sympathetic message. The business transacted at the general meetings and in the sections was of an important character, and every possible phase of preventive and curative endeavour was fully discussed. Full reports of the proceedings appeared in the principal daily papers, and a detailed account of the addresses, papers and discussions has been published in the *Lancet* and *British Medical Journal*.

PROFESSOR KOCH'S ADDRESS

The most exciting event which occurred during the meeting of the Congress was undoubtedly the doubt cast by Koch on the susceptibility of man to infection by bovine tuberculosis. This had previously been held as an axiom in the prophylaxis of tuberculosis, tuberculous meat and milk were credited with infective power and precautions of an elaborate character were taken accordingly. Koch's argu-

ments, as summarised by Professor Macfadyean, were—(1) "That the bacilli found in cases of bovine tuberculosis were much more virulent for cattle and other domestic quadrupeds than the bacilli found in human tuberculosis, (2) that this difference was so marked and so constant that it might be relied on as a means of distinguishing the bacilli of bovine tuberculosis from those of the human disease, even assuming that the former might occasionally be found as a cause of disease in man, (3) that if bovine bacilli were capable of causing disease in man, there were abundant opportunities for the transference of the bacilli from one species to the other, and cases of primary intestinal tuberculosis from the consumption of tuberculous milk ought to be of common occurrence. But *post-mortem* examination of human beings proved that cases of primary intestinal tuberculosis were extremely rare in man, and therefore it must be concluded that the human subject was immune against infection with the bovine bacilli or was so slightly susceptible that it was not necessary to take any steps to counteract the risk of infection in this way." Any statement made by Koch on the subject of tuberculosis is deserving of exceptional regard, but the sense of the Congress was plainly and firmly manifested against accepting his views as sufficiently supported by evidence or relaxing in any manner or measure existing precaution relating to the consumption of tuberculous meat and milk. As Lord Lister tersely puts the case, Dr Koch has shown that human tubercle is very rarely, if ever, transmissible to the bovine species. But of the converse proposition, incomparably the more important, that bovine tubercle is not communicable to man, there is no reliable evidence. Account must also be taken of the evident resistance of the intestinal tissues to tuberculous infection and to the possibility of infection through these tissues without lesion of them occurring in transit. The question awaits for its solution further investigation.

SPITTING

There can be no question or doubt that the sputum is the main means of tuberculous infection. The disposal of the sputa assumes therefore a principal place in preventive action, and the unsavoury subject of spitting must be tackled not only by the medical profession but by the public, not only in hospitals and sanatoria for the consumptive, but in houses, in streets and

highways, in public conveyances, and wherever men and women frequent and consort, and the contingency exists that the tuberculous who from the nature of their malady must expectorate, may resort to it. It must be realized by the public that promiscuous spitting is a positive and serious danger, and that special arrangements must be made for receiving disinfecting and destroying the bronchial and salivary stuff ejected by coughing. This is of course more specially necessary in the case of those known to be the victims of pulmonary tuberculosis, but a reform in spitting habits in all grades of society and all circumstances is clearly necessary.

THE ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION

The meeting of the British Medical Association, which was held at Cheltenham last week, was a successful one, and is likely to hold a prominent place in the annals of the Association. It is curious that this meeting should have taken place in the first year of the reign of King Edward VII, the previous one having occurred in 1837, the year of the accession to the throne of the late Queen. The special event which will render this meeting memorable is the acceptance of the new constitution, which with some unimportant modifications has been sanctioned as drawn up by the Committee. Having sketched in a former letter the lines on which the proposals of the Committee were laid, I need not repeat them.

THE BAHADURJI GHOST

This annual apparition assumed a new and somewhat humorous form this year. It will be recollected that at the Ipswich meeting Dr S C Mullick resuscitated the old rejected Bahadurji legend and induced the Association to appoint a Committee to investigate sundry charges formulated against medical administration in India. The motion as originally presented contained some offensive terms such as "pitchforking" and "bar sinister," and it was emasculated and accepted in that shape. This acceptance was heralded in India as a grand triumph, and the motion was quoted in its unemasculated shape. One might have supposed that in advancing charges affecting the administration by a responsible Government and department of an important branch of the public service, Dr. Mullick would have had in possession

the evidence on which these charges rested. Yet strange to say this evidence was not forthcoming, and the Committee was compelled to "deprecate the attitude of Dr. Mullick in preferring charges against the administration of an important public service which he has failed to substantiate." An effort was made at the Cheltenham meeting to give Dr. Mullick an extension of time for the purpose of whipping up evidence, but without effect. It is time that this annual farce was finally proscribed.

THE R. A. M. C.

The Committee which was appointed by Mr. Broderick to advise him regarding the reorganization of the Army Medical Service, has, I understand, completed its labours. Rumours are afloat as to the nature of the new scheme, but they are not to be trusted. From good sources I gather that the condition of the service will be raised and improved materially, and that the element of destruction which was feared forms no part of the reform which is constructive, all that seemed sound and good and time-honoured in the old organization being preserved. I am glad to say that, on the best authority, I can report that amalgamation of the R. A. M. C. and I. M. S. in India forms no part of the new project. A measure of this kind would, I am convinced, shatter the old I. M. S. and fail to benefit the R. A. M. C., while the medical and sanitary services of the Indian Empire would suffer irretrievable injury. Amalgamation for military purposes would necessitate the creation of a Civil Medical Service which would not possess the liberty, prestige and elasticity of the old dual institution in which men of every bent and capacity have found freedom and scope for the exercise of their various acquirements and satisfaction for their tastes and inclinations.

K. McL.

6th August 1901

Current Topics.

CHANGES IN THE MADRAS MEDICAL COLLEGE

THE question of the reorganisation of the staff of the Medical College in Madras, as well as of the Madras General Hospital, which has been under consideration for a great number of years, has at last taken shape in the form of a Government order. In the instructions issued

by Government to the officers who were responsible for drawing up the scheme it was specially laid down that the latter should be based upon the understanding that no addition to the existing establishment of commissioned officers would be allowed by the Secretary of State. Brought forth under such restrictions, it was not to be expected that the result would be anything more than a mere redistribution scheme. Under the new arrangement some officers have more work to do than before, whilst others have less, there has been no general lightening of the burden.

The following are some of the more important changes. The staff of the Medical College has been added to by bringing in the surgeons of the second and third districts of the Presidency town, who were formerly unconnected with that institution. In a similar way the General Hospital has received an addition of two officers to its staff, namely, the Surgeon of the third district and the Professor of Anatomy. *Materia Medica* is now taught by a physician instead of by a surgeon, and hygiene by an officer of the sanitary department instead of by one of the physicians of the hospital. The chair of physiology has been divorced from that of ophthalmology, and the former subject is now taught by one of the physicians of the hospital. The Principal of the Medical College, who is also Principal Medical Officer of the General Hospital, is relieved of the chair of medicine.

The staff of the General Hospital under the new scheme is as follows —

MEDICAL.	SURGICAL
Principal Medical Officer	Senior Surgeon and Professor of Surgery
First Physician and Professor of Medicine	Second Surgeon and Professor of Biology
Second Physician and Professor of Physiology	Third Surgeon and Professor of Anatomy
Third Physician and Professor of <i>Materia Medica</i>	Resident Surgeon and Professor of Pathology
Additional Medical Officer	

The first physician in addition to his hospital and professorial duties is also burdened with the charge of the second district and of the Voluntary Venereal Hospital. On account of his professorial duties he receives an addition to his pay of Rs 200, but his allowance of Rs 100 for charge of the Voluntary Venereal Hospital is withdrawn.

The second physician in addition to his hospital and professorial duties has also charge of the third district, and receives an allowance of Rs 200.

The third surgeon in addition to his hospital and professorial duties is also Port Surgeon of Madras.

The teaching of bacteriology is temporarily to be carried on by the Professor of Hygiene. In the meantime a scheme is under consideration for establishing a health laboratory, to be under the

charge of an officer whose whole time will be devoted to bacteriological work, and who will take up the duties of the chair of bacteriology.

The Superintendent of the Government Penitentiary is in future to be a medical officer of the jail department.

Other minor changes are as follows — The Lepet Hospital is to be under the charge of an Assistant-Surgeon instead of the Surgeon of the first district.

The appointment of Port Surgeon and the charge of the Governor's Body-Guard, formerly held by officers in civil employ, are now to be handed over to the military department to arrange for.

THE INNER HISTORY OF THE INDIAN ADDENDUM TO THE B P 1900

OUR readers are all aware that in the end of 1900 there was issued by order of the General Medical Council a little volume entitled "Indian and Colonial Addendum 1900 to the British Pharmacopœia of 1898." This book was reviewed at length by us, and we were under the impression, which we find shared by others, that the publication of this Addendum was in some way connected with the work of the Central Indigenous Drugs Committee which we knew to be sitting at intervals for several years past.

It appears, however, from the recently published Report of the Proceedings of the Central Indigenous Drugs Committee (Vol 1, 1901) that there was no foundation for the belief that the Addendum was in any way an offspring of the labours of this Committee, in fact it appears that the publication of the Addendum was hurried on in opposition to the expressed wishes and desires of that Committee (see Report, p 89, &c). Where then did Dr Attfield, F.R.S. (who may be taken to represent the Pharmacopœia Committee of the Medical Council) obtain his information as to the desirability of giving an official place to the Indian drugs included in the published Addendum?

It appears from a preliminary pamphlet circulated by the Medical Council Committee and noticed by us at the time, that much information was received by the Council from Major F J Crawford, F.R.S., Lieutenant-Colonel H St C Canthairs, F.R.S., and Mr R Hollingsworth of the Madras Medical College and Medical Store Depot.

It would appear that two of these gentlemen were members of a previous Indigenous Drugs Committee which existed in 1894, and which the Central Committee in Calcutta held to have terminated its existence by the submission of its final report in 1894 (Report, p 86). At the same time there had been formed a Madras Branch of the Central Indigenous Drugs Committee, so that the Central Committee felt constrained to state that "it was an absolutely

impossible and useless state of affairs that there should be two local Indigenous Drugs Committees sitting in Madras at one and the same time whether their operations were friendly or inimical."

The matter is thus summed up in a letter from the Government of India, dated 19th May 1900 —

"The origin of the Committee of 1894 appears to be indicated in paragraph 4 of your letter. The General Council of Medical Education and Registration of the United Kingdom first invited the assistance of the Government of India in the preparation of what has now become the draft Addendum to the *British Pharmacopœia* in 1893, and in furtherance of the objects of the Council a Committee of three members styled the Pharmacopœia Committee, was formed in India under the orders of Government. The Pharmacopœia Committee having incidentally consulted the Medical College, Madras, the latter institution appointed a Committee consisting of Major Crawford, I.M.S., and Mr. Hollingsworth to draw up the necessary reply. It is this Committee which is now variously alluded to as the Committee of 1894 or the second Madras Committee. The Pharmacopœia Committee, which was the cause of the existence of this Committee, itself ceased to exist on the submission of its final report in November 1894. This being so, the Madras Committee is entirely without any status conferred directly or indirectly by Government subsequent to that date, and its later proceedings in adding an additional member to its number and communicating direct with the British Medical Council and Professor Attfeld, though doubtless conducted in perfect good faith, are quite without any Government authority.

In these circumstances the Government of India agree with you that its continued independent existence is undesirable and should cease, and they are also of opinion that direct communication with the General Medical Council or Professor Attfeld should be conducted solely through the Government of India.

It may be said "after all what does it matter to the medical practitioner who furnished the information?" In this, there would be some truth, but what we wish to lay before our readers is the fact that the drugs now published in the Addendum have not the authority of the Central Indigenous Drugs Committee, and in fact have been published in the Addendum in opposition to the strongly expressed wish of that Committee (Report, p. 89). The Central Committee was unanimous in thinking it to be "most unwise to endeavour to precipitate an authoritative publication," "practically" (they write) "nothing more is known regarding the Indigenous Drugs of India than will be found in Waring's Indian Pharmacopœia and the Pharmacographia Indica."

What the Central Committee wanted was time to clinically and chemically investigate a series of drugs of traditional repute. This, we know, practically speaking, has not been done, and we agree with the Central Committee that the "authoritative publication" in the Addendum to the British Pharmacopœia of drugs about which very little is known was most "unwise." As it now stands the drugs thus admitted to the British Pharmacopœia have received a sort of

official sanction and authority which our knowledge of them by no means entitles them.

Meantime the Central Committee is endeavouring to get a certain number of the better reputed drugs tested clinically by selected and volunteering medical officers—a procedure by which they hope to collect some definite evidence as to their value, which we hope will replace, or strengthen it may be, the large amount of purely traditional statements which have been handed down about many of the indigenous drugs of India.

THE TREATMENT OF SNAKE BITE

The following simple rules for the treatment of snake-bite are here republished from a circular sent out by Colonel A. Scott Reid, I.M.S., Administrative Medical Officer of the Central Provinces, as they deserve a wider publicity. We publish in another column a paper on this subject by Colonel Scott Reid. The Central Provinces is, so far as we know, the only Province in which an attempt has been made on an extended scale to introduce and test the value of the antivenom serum treatment of snake-bite —

- 1 If not already efficiently done before the patient comes under medical treatment, a ligature, in the case of a limb, should be applied as near as possible to, and above, the bite.
 - 2 The site of the bite should then be scarified and the latter encouraged to bleed.
 - 3 Next wash the wound with a fresh solution of chloride of lime (1 in 60 of distilled water).
 - 4 Then slowly inject, 40 c.c. (the contents of four phials) into the subcutaneous cellular tissue in either flank. Before doing so, the syringe should be boiled for five minutes in a solution of boric acid, and the skin should be washed first with soap and water and then with an antiseptic solution. Should, however, the life of the patient be in immediate danger, these precautions may be dispensed with, in order to save time. The injection should take at least one or two minutes. Children require as large or even a larger dose than adults.
 - 5 When the case is very urgent, the injection ought to be made directly into a vein.
 - 6 After this, inject, with the same syringe, 8 to 10 c.c. of the chloride of lime solution in the track of the bite and around it.
 - 7 The ligature may then be removed.
 - 8 When constitutional symptoms are well developed, the measure under 4 or 5 should be the first to be adopted.
 - 9 Rub the patient, give coffee or tea to drink, and cover warmly so as to cause sweating.
 - 10 Do not give ammonia or alcoholic stimulants.
 - 11 Do not cauterise the bite with a hot iron or by chemical caustics.
 - 12 Do not delay the treatment until constitutional symptoms develop. The serum is in itself harmless, and the only danger is that of an abscess forming at the site of injection from imperfect antiseptic precautions.
- Note 1*—Not less than four phials each containing 10 c.c. of antivenene (the contents of four phials being the dose for an adult) and not more than two years old, counting from the date on the box, with a sufficient quantity of chlorinated lime, should be kept in stock.*

* From experiments recently made at the Plague Research Laboratory, Bombay, it has been calculated that 87 cubic centimetres of fresh serum are required to neutralise the

Note II—The serum from a bottle which has been once opened should never be used again

Note III—Medical subordinates in charge of hospitals or dispensaries will be held responsible for making themselves thoroughly acquainted with the above instructions, and serious notice will be taken of any neglect to apply them when occasion arises. Should there be any point regarding which they are in doubt, they are to apply to the Civil Surgeon of the district

THE HEALTH OF CALCUTTA

THE annual report submitted by Dr Neild Cook, the Health Officer of Calcutta, is of more than usual interest. The new census shows an increase in the population of Calcutta of no less than 23 per cent on the figures for 1891, with the result that the density of the population has greatly increased, till it has reached the high figures of from 111 to 282 per acre, the density of London being only 60. This gives point to Dr Cook's recommendations on the overcrowding problem which has become an acute question in Calcutta, and one which the Corporation is seriously considering after having received the reports of the Health Officer. The increase of the population must be entirely ascribed to immigration. These large influxes of persons from up-country districts are often a cause of small-pox outbreaks, and cholera is also frequently imported by them.

Dr Cook is unable to resist the conclusion that the mortality in Calcutta has been progressive, and this is explained by the fact that overcrowding is added to other insanitary conditions. He also points out that three diseases have made their appearance within the past decade, *viz*, Cerebrospinal Fever, Bubonic Plague and Influenza. As regards the former disease, there can be no doubt but it is to be reckoned with as one of the diseases of the general population, though hitherto it has been chiefly recognised in jails and emigration depôts where accurate diagnosis and registration of disease is more likely to be met with than among the general population.

The high infant mortality of Calcutta is notorious, it was no less than 443 deaths of children under one year per thousand births.

No wonder that Dr Cook can write of the "enormous waste of life in Calcutta from preventable causes."

In spite of a filtered water-supply of no less than fifty-one gallons per head, much impure water is drunk from the 1,000 tanks which Dr Cook calculates as existing in Calcutta. To fill up these tanks is a task beyond the means of their generally poor owners. As regards plague,

amount of venom which a full sized cobra is capable of ejecting at one bite, and, as the anti toxin deteriorates rather rapidly in this country, 40 cubic centimetres should be taken as the ordinary dose when a person is known, or suspected, to have been bitten by one of the more dangerous snakes, such as the cobra, krait or Russell's viper. Children require as much or even more, as the amount of venom they receive is presumably as great, and their resisting power less, than that of an adult.

Dr Cook believes that all that can be done in a big Indian city like Calcutta is prophylactic inoculation and the destruction of rats, and till popular prejudice against these measures is overcome, he does not think the town will be free of plague. Even small-pox has not disappeared owing to the extreme difficulty of thorough vaccination. As regards malaria, we are glad to find Dr Cook impressing upon the Corporation the necessity of taking measures dictated by modern research. He enumerated the following four lines of prevention, early treatment of cases by quinine, &c, isolation of cases by mosquito nets, the use of curtains to keep off mosquitos from the healthy, and the filling up of all tanks and excavations where the anopheles is proved to breed. The latter with surface drainage is, says Dr Cook, the only one which offers any real prospect of relief. This interesting report concludes by a series of recommendations for the removal of insanitary *bustees*, and the construction of model dwellings or tenement houses for the inhabitants. There can be little doubt but that this question of the removal of insanitary *bustees* is the most important question in connection with public health in Calcutta, and every year that passes only increases its urgency and importance.

RATS AND PLAGUE

EVEN on such a well worn subject as plague has now become, Major Deane, R.A.M.C., the special Plague Medical Officer, Calcutta, has continued to be original. We cannot find space to follow him throughout his recent report, but we may note that in his experience it is an established fact that "a plague infected room can be rendered safe for immediate occupation by disinfection, though this will not prevent the recurrence of the disease probably twelve months afterwards."

Major Deane then goes on to say without hesitation that "*rats have practically no concern with plague*." This is a statement which is in pretty strong opposition to generally received opinion. When, however, one considers the matter one must admit that we are no nearer a solution of the connection between rat-plague and human plague than we were five years ago. That the rat suffers from plague is an admitted fact, but what the connection between rat-plague and man-plague has not certainly been determined. In many places rat-plague has preceded human plague, in others both have been discovered at the same time, in a few instances rats have escaped where men have suffered. But what is the connection between rat and human plague? The only attempt to answer the question is the theory of Simond that the flea is the intermediary, but the discussion on this point only served to show that distinguished bacteriologists, even as medical

men, were very ignorant of natural history, for it appears that the rat-flea and the *pulex irritans* which sometimes vexes man are quite different species. Nevertheless the experiences of plague in Australia, as related by Dr Ashburton Thomson (*Journal of Hygiene*, April 1901), were very strongly in favour of the flea as the intermediary. But to return to Major Deane's report, he analyses the references to rats and plague in various reports and shows that, in his opinion, the "recorded evidence dealing with Bombay Presidency and Calcutta suggests that rats certainly are *not* the chief disseminators of infection."

This is the more strange, for in this very report Dr H M Clarke and Dr Pettifer give evidence to show that in their opinion "the casual connection between rat and human plague is plainly marked," and "the appallingly virulent outbreak" in one locality in Calcutta is explained on the presence of an "enormous rat population," and a definite history of rat mortality preceded the outbreak of human plague.

It certainly remains for those who advocate the destruction of rats as a means of prevention to demonstrate the connection which, according to their theory, must exist between the plague infected rat and the plague infected man. So far beyond the undoubted fact that both species of mammals are liable to plague practically nothing certain is known.

In this connection we may note that the experiences of Klein and the Medical Officer of the Port of London (*Lancet*, August 17th) agree with that of Mr Hankin in this country in showing that attempts to destroy rats by the use of the Danysz rat bacillus are perfectly useless under practical conditions.

ENTRANCE OF PARASITES THROUGH THE SKIN

It seems to us that the most interesting portion of the work done at the Tropical Section of the British Medical Association Meeting recently held at Cheltenham was the paper read by Dr F H Sandwith of Cairo on "The Entrance of Ankylostoma Embryos into the Human Body by means of the Skin." This discovery was made by Dr Looss in 1898. The discovery was an accident, while working in the Cairo Laboratory a drop containing embryos fell on his hand, and on happening to examine the drop some minutes later Dr Looss was astonished to find that it contained countless empty embryo sheaths and a few sluggish embryos. The majority of them had apparently entered the skin, his hand became red and burning, and later he suffered from anæmia and debility with ankylostomata in his feces. Since then the experiment has been repeated on a human leg one hour before it was going to be amputated. Sections of the skin showed that the embryos had entered chiefly by the hair follicles.

Lieutenant-Colonel G M Giles, I.M.S. (ret'd), said that he had examined Dr Looss' specimens and had no doubt that the skin was one mode of entry of the parasite.

The meeting did not seem to appreciate this method of entry for the ankylostoma embryo, doubtless if some one had suggested the aid of a mosquito the paper would have been hailed with acclamation. It is curious how a section of the meeting which eagerly grasped at the idea of a "parasite origin," for stone in the bladder should have failed to see the significance of Dr Sandwith's communication.

If the passage of these embryos through the human skin can be proved by the microscope, it is a matter of very considerable importance, it might for example explain the bladder infection in case of bilharzia disease, which soldiers in Natal popularly believe to be acquired through the skin while bathing, and it would still more easily explain the numerous cases of guinea-worm infection, where the parts affected are those kept damp by the constant application of water, as by the wet *dhoti* of a sepoy, or the *mussack* of the *bhust*. These cases were very different to explain away on the cyclops theory, and similar cases of guinea-worm infection must be well known to many of our readers.

THE NEW BLOCK AT THE GENERAL HOSPITAL, CALCUTTA

THE new block which has recently been opened in the Presidency General Hospital, Calcutta, by H H the Lieutenant-Governor of Bengal, makes a handsome and very important addition to the Hospital. It is a large red-brick three-storied building, containing wards in each story. The centre contains a lift worked by electricity, which goes right up to the roof, which is so arranged as to form a splendid exercise ground for convalescents or could be used in dry weather for the open-air treatment of tubercle cases. Each ward has a most complete and up-to-date equipment, with marble floors and white tiled walls and electric fans. Between each ward on each story is a set of rooms for paying patients, a segregation ward for doubtful cases, a linen godown, a doctor's room and the nurses' room. The doctor's room also contains a dark-room for eye and throat examinations. The bathing and latrine arrangements are admirable, and contain the very latest improvements. The operating theatre is a fine, large well-lit room, with electric light and a very up-to-date water-supply. The operating table and side tables are in enamelled iron and glass and of the best quality with all the latest improvements. Altogether it may fairly be said that at last Calcutta possesses an up-to-date and well-equipped hospital worthy of the metropolis. Great credit is due to Major Pilgrim, Captain O'Kinealy and Captain Oldham,

I.M.S., for all the care they have taken to make this hospital equal to any at home. Government has spent no less than fifteen lacs already and several more buildings are still being erected.

WE have been asked to announce that the "Enno Sander" Prize of a gold medal and 100 dollars is offered to Military Surgeons of the United States Army for the best essay on the "Most Practicable Organization for the Medical Department of the United States Army in Active Service."

THE announcement of a Medical Congress to be held at Cano in December 1902 is interesting.

It will probably be found that many medical officers going home or coming out from furlough will find it convenient to stop a few days at Cano for the Congress. Cano in December is a delightful place, and a few days spent there, with the Congress as an excuse, will be a pleasant break in the journey out or home.

IN the report of the Protector of Emigrants, Calcutta, recently published, it is noted that 66 out of 215 deaths which took place during the year in emigrant ships were from cerebro-spinal fever. Yet it was only a few months ago that the medical authorities in the West Indies became alive to the existence of this disease, though its connection with cooly emigrants has been known in Calcutta for over 20 years. There is now no doubt that cerebro-spinal fever is a disease of the general public of Calcutta and probably other places, though till recently it has only been recognised in prisons and emigrant depôts, where it has been carefully studied.

THE note we publish in this issue on the discovery by the Royal Society Malaria Committee of the existence of the two African species of *anopheles*, *funestus* and *costalis* was received early in September, and just too late to be announced in our last issue.

MALTA fever, which we noted as having occurred in a few instances in Simla last year, has again made its appearance, six cases having been diagnosed during the present season.

THE appointment of a third Royal Commission on Tuberculosis was inevitable after Professor Koch's pronouncement.

WE note that Dr. A. Ciombie (I.M.S., retired) makes the following statement in his recent paper on "Diseases of Children in the Tropics" at the British Medical Association Meeting:—"It is a fact that a very large percentage of Natives of India who are not suffering from any

febrile condition, and who have never, or certainly not for many years, suffered from any fever which could be, by any possibility, diagnosed as enteric fever, give the (Widal) reaction in a perfectly characteristic way."

The only foundation for this statement that we can think of is the paper by Major Feyer, R.A.M.C. (*British Medical Journal*, August 7th, 1897), but this statement has been shown to be premature and untrue by Lamb in our columns (April 1901, p. 123), and in a recent number of the *Lancet* (August 24th) Captain F. N. Windsor, I.M.S. (now working at Netley) shows that "as regards its action towards bacillus typhosus the blood of these five Native Indians (examined at Netley on return from Africa) did not differ to an appreciable extent from that of the ordinary European."

A considerable amount of evidence is accumulating to show that the Native of India suffers nowadays not very infrequently from typhoid fever, especially, we might add, in Calcutta.

IN an interesting note in the *Polyclinic* for August a curious mistake is made in the statement that the chigoe or jigger has not yet reached India. As a matter of fact this flea reached India with the 4th Bombay Infantry in December 1898, when that regiment returned from service in British East Africa. Captain P. P. Kilkelly, I.M.S., reported on cases of ulcer, &c., due to this flea, and the 34th volume of this Gazette (for 1899) contains numerous allusions to the jigger.

ONE of the most remarkable facts in connection with Professor Koch's dramatic announcement of the non-connection between human and bovine tuberculosis is the uncanting of a mass of opinion against that connection, which had so generally become an axiom. It is curious that these views, so contrary to generally received medical and veterinary opinion, were uttered with such bated breath and whispering humbleness that they never reached the ear of the medical public. Now, under the ægis of Professor Koch, they are becoming audible.

It cannot be denied that if Koch's new views are proved to be true medical opinion will have received a severe blow, and there will be some excuse for the profane to mock.

CAPTAIN WM. GLEN LISTON, M.B., I.M.S., will be obliged if medical officers can send him mosquitoes for identification. His address is—Research Laboratory, Parel, Bombay.

THE members of the Royal Society Malaria Committee have completed their tour in the Duars, and shortly will go up-country to open the important question of the prevention of Malaria in Cantonments. Their report will be of the greatest possible interest.

WE publish, with pleasure, in this issue, the paper on the Nordiach Treatment of Tubercle by Mr A Caspersz, Barrister-at-Law. His testimony in favour of this method is possibly all the more valuable in that he is not a medical man. Certainly the fiction must nowadays be entirely given up that tubercle is not a common disease in India, it is undoubtedly, and long has been a most common disease of Natives, and we think the time has certainly come for steps to be taken to carry out the modern and most hopeful form of treatment in a well-placed sanitarium in the hills.

CIVIL Surgeons who may be inclined to grumble at the equipment of their hospitals and dispensaries are recommended to read the Hospital Stores Committee's Report (see p 391 below). They will then find that they have much to be thankful for.

THE mosquito is going to be made responsible for leprosy also. In a French exchange we read that Dr Blanchard stated at the Paris Academy of Medicine that leprosy "could be transmitted by mosquitos," and Dr Chantemesse remarked that "leprosy was caught generally at night." What the latter statement means, or how such could possibly be proved, we are unable to guess. "Other vermin," it is said, are the carriers of "Malta fever, relapsing fever, typhus, and perhaps several skin diseases" (R. Ross). Such is the new etiology.

Reviews.

A Manual of Medicine—By Dr W H ALLCHIN
Vol III Diseases of the Nervous System. London: Macmillan & Co, 1901. Price 7s 6d. Pp 417. Extra Cr 8vo.

WE have already, in our reviews of the first two volumes of Dr Allchin's "Manual of Medicine" (*I M G*, 1900, p 406) expressed ourselves most favourably on this new manual. The third volume, which is entirely devoted to the diseases of the nervous system, is fully equal to its two predecessors, and in fact for the senior student or physician who wished to re-learn all that is new in the physiology and pathology of the nervous system, the book can be strongly recommended. A glance at the list of contributors shows that the Editor has made a judicious selection, chiefly from the number of the young and rising specialists in nerve diseases. The article on the neurone in relation to diseases of the nervous system is an able one, and discusses a difficult subject in a clear and satisfactory manner. The general etiology of nerve diseases is dealt with under the headings—Hereditary, Traumatism, Infective Poisons, e.g., Syphilis, Chemical

Poisons, Vascular Supply. The next chapter contains clear accounts of the organic diseases of the brain and its membranes, the chapters on tumours, aphasia, &c, and the spinal cord diseases are all well done. Nearly every chapter is illustrated by tables, diagrams, &c, which add much to the value of the book. The volume contains 27 illustrations and 6 coloured plates. A most useful table of spinal localisations is also added. The volume concludes with an altogether admirable chapter on medical ophthalmology by Dr James Taylor, of the Royal London Ophthalmic Hospital, and a chapter on the application of electricity to medicine by Dr Bertram Abrahams. To conclude, this volume is an admirable continuation of Dr Allchin's "Manual of Medicine," and in itself forms a very complete and up to date manual on diseases of the nervous system. The series is excellently printed and published in the style we are accustomed to associate with books published by Messrs Macmillan & Co.

Digest of Human Physiology—By S M VADIS, M.B. (Edin.) Madras, 1901.

THE aim of Dr S M Vadis, M.B. (Edin.) (late Senior Demonstrator of Anatomy and Physiology in the School of Medicine, Edinburgh), is, as he writes in the preface (1) "to enable students to digest the most essential points of physiological facts in a most concise manner, while preparing for their examinations, and (2) to enable the busy physicians to refresh their memory on the physiological aspect of medicine."

The author designedly intends this "Digest" to be used by students, so that they "need not spend valuable time in girding voluminous books at the time of examination." We understand this to mean that Dr Vadis intends his book to be used by students in the pressure of the few weeks before examinations as a sort of ready-made note book on physiology. In so far as such books are useful, we have nothing but praise for this digest, but would earnestly urge upon any student who may read this, that this volume though a "short cut to the examination" will certainly not do as his sole text-book on such an important subject as physiology. In the reviewer's time such digests were made in note books by the students themselves and such self-made note books based on Foster or Kike were extremely useful—when supplemented by the usual series of lectures and demonstrations. The present volume by Dr Vadis is a good example of this particular class of book with which we have not much sympathy. It certainly shows Dr Vadis to have mastered his subject very thoroughly during his student career at Edinburgh.

The volume is clearly and distinctly printed, and is as good as any other cram book on the subject with which we are acquainted.

Current Literature.

SPECIAL SENSES

Tobacco Amblyopia.—This subject has attracted some attention of late. The interesting case, recorded by Captain F. O'Kinealy, *M.R.S.*, in the July number of this Gazette, presented some unusual features as regards the direction of the defects in the visual fields. In the May number of the *Ophthalmic Review*, Dr Shaw of Belfast recorded two cases, in one of which the patient was a lad of fifteen only, who had smoked cigarettes since he was eight, the other patient had reduced his consumption of tobacco to what is regarded as safe (one to two ounces a week) for nine months before the amblyopia had appeared. In the June and July numbers of the same Review appeared two papers, the first by Mr J. Herbert Fisher on 'The Influence of Nicotin on Ganglion cells,' and the second by Mr J. Herbert Parsons on the Pathology of Toxic Amblyopias. Mr Fisher's paper is an attempt to apply Professor Langley's experiments with nicotin in animals to the explanation of nicotin blindness in man. In the rabbits, cats and dogs if nicotin be injected into a vein, electrical stimulation of the cervical sympathetic on the proximal side of the superior cervical ganglion failed to produce any secretion of saliva, stimulation of the ganglion itself failed also, but applied to the nerve fibres between the ganglion and the gland, the gland cells at once actively secreted. This experiment suggests an interference in the ganglion cells themselves by the nicotin, and this was proved to be so by the same results occurring when the ganglion was merely exposed and painted with nicotin. Experiments with other nerves (chorda tympani, ciliary), gave the same results, and Langley now when he wants to know if impulses are transmitted along nerve fibres direct or only by synapse through cells of a ganglion, repeats any experiment he may be making, first injecting the animal with nicotin, if the impulses now, of whatever nature, fail to pass, he is sure ganglion cells are in the path. Fisher, applying these results to man and tobacco, assumes that the impulses originated in the macular cones reach the brain only after transmission through ganglion cells, while those started in more peripheral parts of the retina pass without such interruption along more direct nerve fibres. In this way the central scotoma characteristic of tobacco amblyopia would be explainable more easily than by assuming a retro bulbar neuritis as is generally done. The existence of changes in these ganglia, rendered probable by physiological experiment, is to a certain extent borne out by histological pathological observation. Moreover, definite ganglionic changes in the retina have been found by Mard Holden in cases of quinine amblyopia, and proved to be the primary lesion in this form of toxemia, followed at a later date only by obvious changes in the optic nerve. Mr Parsons, who, as research scholar of the British Medical Association, has worked at the subject for some time past, does not agree with Mr Fisher's simple theory. He begins by pointing out that there is no evidence to show that nicotin is the *causa causans* of tobacco amblyopia, pyridin and its derivatives (picolin, lutidin, collidin, &c.), more probably are, that pure cases of tobacco amblyopia, are very rare, alcohol nearly always being a factor as well, that our knowledge of the histology of the macular region of the retina is defective, as it has not yet been carefully examined by the Golgi method, and finally that the changes in the ganglion cells, shown by the Nissl method in some toxic amblyopias (quinine, filix mas, carbon disulphide) have not yet been demonstrated either in tobacco amblyopia in man, or in nicotin poisoning in animals, while the changes described have not been limited to the macula.

For these reasons, he says he would rather have left the matter until more accurate knowledge had been attained. As, however, Mr Fisher had discussed the subject with different conclusions to himself he enters into it more minutely. On morphological and histological grounds he comes to the conclusion that it is inconceivable that the nerve impulses of the more peripheral parts of the retina should not pass through nerve cells *en route* for the cerebral cortex. The evidence all tends to show that the direct tract for the peripheral parts of the retina contains the same number of cell stations as that for the macular region. Parsons rejects some experiments he made upon the histological effects of nicotin upon nerve cells which support the conclusion of Langley that the action of the drug is not directly upon the cell but upon the synapse of the pre ganglionic fibre. For all these reasons Parsons rejects Fisher's theory and is inclined to attribute tobacco amblyopia to a two fold action of nicotin (or rather the unknown *causa causans*) (1) vascular, causing vasoconstriction of the arterioles which would explain the selection of the sparsely supplied macular region, (2) paralytic, upon the synapses either of the cone fibres, or of the cone bipolars, or of both.

F. P. MAYNARD, F.R.C.S.

SURGERY

Chloretone. Dr Hirschman *The Therapeutic Gazette*, 15th March 1901, recommends the administration of chloretone before chloroform or other anaesthesia with a view to the prevention of nausea and vomiting during and after operation. He gives doses of ten grains to women and to boys under sixteen years of age, and of fifteen grains to men, half an hour before commencing the use of the anaesthetic. He prefers to give it dry on the tongue, washing it down with an ounce or two of warm water. Patients, who have had chloretone, are alleged to have little or no stage of excitement, to require one third to one half less of the anaesthetic, and to be less apt to come out of anaesthesia suddenly during operation should the administration of the anaesthetic have been relaxed. Hirschman's statement is based on a comparative study of sixty cases, half of whom received chloretone and the other half got none.

Post Operative Pneumonia and Empyema.—Dr Philip Mariel estimates the percentage of post operative pneumonia to range between 12 and 33 of 1 per cent, and the fatal cases between 01 and 09 of 1 per cent, but he has found the difference of percentage given by various writers in different countries so divergent that no exact figure is yet determinable. The lessened resistance or vitality of the patient he considers to be the main factor in the etiology of pneumonia after operation. Among the probable contributing agencies that lessen vital force he mentions undue exposure during or after operation, alcoholism, bronchial irritation from the anaesthetic, age, &c. He points out that pneumonia after surgical operations was a far more common cause of death in the pre anaesthetic era than it has been since. He does this to show that anaesthetics are not specially to blame. But he omits to point out that there is not such a great gap between the pre antiseptic and the pre anaesthetic periods, and that so many of these surgical pneumonias of former times were really due to sepsis.

Figures are given which at the first glance seem to prove that fatal pneumonia is more apt to follow the use of chloroform than ether. But he points out that this is really due to the fact that chloroform was the anaesthetic usually chosen in cases of malignant disease of the mouth and respiratory tract.

In the rare cases in which empyema supervenes Dr Mariel does not recommend aspiration till the crisis is over, unless the breathing and circulation be gravely

embarrassed. He thinks that the sudden diminution of intrathoracic pressure favours more rapid pulmonary circulation and absorption of toxic material.

Post Operative Insanity—Setting aside septic absorption, the effects of iodoform or alcohol, organic disease of the kidneys, of the intestinal tract, or of the central nervous system, the Editor considers there still remains a very small percentage of cases in which a loss of mental balance, usually temporary, develops after operation, and which can only be ascribed to the psychical shock of the operation.

The character of the operation, formidable or slight, does not appear to affect the incidence of this form of insanity. Operations on the eye are peculiarly liable to post-operative psychoses, partly due to fear of loss of vision and the effects of the dark room, but much more probably due to advanced age, because senility is a great predisposing factor. Engelhardt concludes that post-operative insanity develops most frequently in those predisposed by heredity, chronic alcoholism, age, anxiety and fright. The shock and exhaustion incident to operation he regards at most as the exciting cause in those with distinct predisposition.

Lupus Vulgaris successfully treated with Ethyl Chloride.—"Treatment," April 1901. Dr C A Dethlefsen, of the Hjaltebro Hospital in Jutland, obtained a most satisfactory result in a case of extensive lupus of the face by repeated freezing of the diseased area with ethyl chloride. A woman 29 years of age had suffered from lupus of the face for twelve years. Most of the left cheek and the whole of the lower part of the nose were affected. The treatment consisted in thorough freezing of the lupus area without previous scraping. The freezing was done daily during the first week. Later, every second or third day. Towards the end, only once or twice a week. Each freezing was followed by a great rush of blood towards the affected part. This reaction was accompanied by serious transudation, which dried and formed a firm crust. This crust was removed before the next freezing. The patient was discharged after a stay of ten weeks. The condition then was—

The ulceration on the left cheek had completely healed, the nodules had entirely disappeared, and the whole was covered by a newly formed smooth skin. The nose had acquired its normal size and shape, and the skin on it was almost normal in appearance, as on the cheek.

D M MOIR, M D

MEDICAL SOCIETY

THE BOMBAY MEDICAL AND PHYSICAL SOCIETY.

We have last month referred to the article on malinger ing among prisoners by Captain J Jackson, I M S. The June issue of the *Transactions* of the Bombay Society contains a large amount of interesting matter. Major W H Quicke, F R C S I M S, showed a remarkable case of repeated plastic operations on the face after an operation for the removal of a large round cell sarcoma of the nose and upper lip.

Captain J B Smith, M B, I M S, reported four cases of perineal litholapaxy, to which are added some excellent remarks by Lieutenant-Colonel W G H Henderson, I M S, F R C S I, whose experience in stone is unrivalled. Lieutenant-Colonel Henderson points out what is often forgotten that the secret of success in Keith's operation lies in keeping the opening in the skin and in the urethra as small as is compatible with the introduction of the instrument. We quote the following paragraph *in extenso* as it puts the value of perineal litholapaxy in a few words—

"When a stone is too large to be grasped by the largest lithotrite introducer by the urethra there remain the following courses open to the Surgeon—

- (a) Lithotomy in some form or other, left lateral, median or supra pubic.
- (b) Keith's perineal litholapaxy.

(c) Milton's operation described by him as a perineal lithotomy (preferably lateral) followed by crushing of the stone and its evacuation by suitable instruments.

When stated thus the advantages of Keith's operation become manifest. It is not an operation intended to replace litholapaxy but one to extend litholapaxy to cases which must otherwise be treated by some form of cystotomy. What the advantages of litholapaxy (for litholapaxy is impossible) through a perineal cystotomy are, I fail to understand. It appears to me neither one thing nor another. It is true that the primary incision is comparatively small on account of the stone being removed piece meal, but the size of the opening precludes the use of the cannula and evacuator, so that it can hardly be classed as a form of litholapaxy at all and cannot therefore be compared with that operation. Milton states that the successful results of this hybrid operation are largely due to the drainage afforded to the diseased bladder. If he means that this operation should only be performed when the bladder is so diseased as to require drainage, the matter assumes a different complexion. But if not, I think it a pity that the perineal operation should be condemned for not affording what is not always necessary. It would be bad surgery to perform an operation which ensures free drainage to a bladder when this is not required. If such drainage is necessary, is there anything to prevent the opening in the true perineal litholapaxy being enlarged and free drainage established? As far as my experience goes, and I am also quoting the opinion of Major Baker, with whom I have discussed the subject, there is nothing so efficacious as free drainage after cases of litholapaxy, when such is called for. Litholapaxy pure and simple could not be condemned because it does not supply this want. Why, therefore, should the perineal operation? The perineal operation again is required when the stone is too hard to be crushed by a lithotrite introduced by the urethra. These stones can often be grasped with ease, but are yet far beyond the crushing power of the lithotrite.

ANNUAL REPORTS

THE REPORT OF THE HOSPITAL STORES COMMITTEE

THE report of this Committee, which consisted of Colonel R. de la Cour Corbett, M D, D S O, R A M C, as President, Major Hill, I S M D, Major W A Sykes, I M S, D S O, Major G A Williams, I S C (Military Accounts), and Major T McCulloch, R A M C, as Secretary, has recently been published, and if its recommendations are acted upon, much will be done to increase the efficiency of the military hospitals in India.

The Committee made a careful examination into the supplies and quality of the food stuffs supplied for hospital with the results that in many cases most startling divergencies were found, e.g., butter, or what was called butter, was contracted for, in some places, at under six annas a pound, and in others at one rupee four annas. In Agra, while the cost of the milk to make a pound of butter was over ten annas, the 'butter' was supplied at five annas nine pies, no wonder we read that it contained "60 per cent. of foreign matter." The Committee, therefore, recommend "the establishment of Government dairies at all stations, and that it be a strict rule that the hospitals shall have the first claim on butter and milk from such dairies."

When we read of brandy being purchased at rupees twenty-seven per dozen and port at under fifteen rupees, we see the force of the suggestion that the P M O, H M S Forces, should select the brand to be used, and as the military hospitals in India use no less than 813 dozens of port in a year it is obvious that it would pay a good firm to contract for a really good brand of port. In the same way it is recommended that contracts for English and country beer be made direct with the manufacturers or importers.

The remarks on the price of aerated water, show equally extraordinary divergencies in price, while at Dehra a good soda water and lemonade can be made and sold for three annas a dozen, the price in other places is as much as sixteen annas. The amount of aerated waters consumed in military hospitals is extraordinary, 121 bottles per 100 diets is the average for the whole of India, and a total of well over two million bottles were consumed in the hospitals in the year 1899-90. Lemonade seems a favourite beverage of the sick soldier, we presume it is only because "plain" soda water is so insipid. The Committee propose to use lime juice, the "nimbu peg" of the country, instead of lemonade, and doubtless the soldier will not object. We have not space to devote to the remarks on the diet scales, the changes made are slight, tea cost Government some Rs 23,000, and it is said that good Indian tea, $\frac{1}{4}$ oz per man, should be sufficient instead of the $\frac{1}{2}$ oz. now provided. It is also shown that a large saving of

fuel would result from the use of aluminium cooking vessels, which we are glad to see recommended. The paternal care of the Committee is also shown by their recommendation to issue only fifteen grains of cinnamon per pudding instead of the wicked extravagance of a powder consisting of ginger, cinnamon, nutmeg and cloves! Let us hope that the flavour of the pudding will be the same!

We also learn that a bottle of brandy really contains 26 oz, whereas by army regulations a well behaved bottle should only contain 24 oz, and this extra 2 oz is not always, it appears, accounted for, and even sometimes, in the careful hands of the lady nurse, a surplus becomes most inconveniently accumulated. Port wine (even at Rs 14 a dozen) is even more ill behaved, for a bottle usually measures out into 27 oz. To control these eccentricities "more accurate measuring" is recommended, and these "comfoids" are in future to be counted by ounces instead of bottles!

We are glad to see that the Committee have had the courage to abolish the senseless rule, that if extras are ordered the "case" must be written up, irrespective of any possible medical or surgical interest it may have. We have not space to follow the Committee in their exposure of the ways of the hospital storekeeper, nor into the somewhat intricate rules for calculating diets, and making up diet-returns on which a medical officer has to waste a lot of his time. The remarks also of the Committee on the round about methods of procedure in case of worn out and condemned equipment are sound and practical and some method less elaborate might easily be devised. We also read that "two bottle openers per ward" should be provided to prevent the use of forks for that purpose! We agree with the recommendation that *dhobie's ghats* should be provided for every station hospital and the use of "practically liquid sewage" for this purpose is certainly inadvisable.

We sympathise with the Committee in their humble protest against the same nine inches of wick being made to do for a "singlewick lamp" and a "duplex lamp," and no one will doubt their statement that this nine inches is either too much for the single lamp or too little for the double. We also note that block tin oil measures must be of a rigid size, viz., 2½ oz., and not 10 oz., or 5 oz., or 7 oz.

The demand for a weighing machine for each hospital is surely reasonable, but we would recommend the beam scale, and not any patent machine, whose working depends upon the caprices of the weather.

The private soldier will be pleased to know that a "chimpanzee tap" has been added to the hospital equipment. The Committee also recommend "small bell shaped mosquito nets" to cover patient's heads, in those days we might venture to suggest the use of mosquito nets for "the altogether" as Trilby has said.

We note that in future the sick officer is to be allowed a chest of drawers, three chairs and a looking glass, articles which apparently he had to do without before. We also note that he is to be provided with "spoons of nickel," "of better quality than that provided for station hospitals," two hot water plates and one crust for salt and pepper. He is also to be provided with the luxury of a bath, which apparently was not before considered necessary for the British officer when in hospital.

The chapter on hospital supplies shows that the Committee approached this question also with a praiseworthy spirit of independence. We note that a supply of leeches is not considered necessary, and that flour is not necessary for what is somewhat ponderously called "the pharmacopoeial cataplasm," which in English means "poultice."

The Committee have not much to say in favour of the institutions known as "Medical Store Depots," and record their amazement and scorn at an "idle tabloid machine" lying for five years useless in one of the Depots. We are astonished that we were even so near the use of tabloid drugs, we did not credit the Depots with even considering such a revolutionary suggestion. But alas, the tabloid machine lies idle, and medical officers have to carry with them even on field service numerous huge bottles of "antiseptic solution" instead of a handful of perchloride tabloids. The Committee recommend that a practical man with sound pharmaceutical knowledge should be appointed to the Depot, who will have that practical knowledge of pharmacy which a medical man need not necessarily possess. We are afraid that most of our readers will sympathise with the Committee in their remarks upon the hard hearted medical storekeepers.

We are glad to see that the Committee are bold enough to recommend the abolition of "antiseptic solution" from the list, but why should they ruthlessly expunge *chrysoarobin*? Does the soldier never suffer from the complaint known as *dhobie's itch*, or perhaps this disease has no official place in the "Nomenclature"?

Be this as it may, why abolish *cubeba*, its use can scarcely be grained, and also *buchu*. Under the same ban fall the following drugs, ergot, kamala, croton oil, sandalwood oil, santonin, tincture of assafetida, chloride of zinc, acetate of

morphine, emplastrum hydragri, atropine, and pulv. cretae alom. cum opio.

We confess to not quite understanding how it is that in military hospitals there is no use for these drugs.

To make up perhaps for the loss of these drugs the senior medical officer of a hospital of fifty beds will, it is recommended, be allowed to purchase no less than two and a half rupees worth of drugs per mensem, actually more than one anna per diem for his fifty beds. In case of a hospital with over two hundred beds the large sum of Rs 15 per month is to be the limit of his extravagances. The responsibilities of these officers are dreadful to contemplate.

The chapter on surgical equipment is refreshing to read. We find it admitted (what every medical officer has known for years) that this question calls for "very careful consideration", for there is "much that is defective, behind the time, and not in keeping with the progress of modern surgery." It is even admitted that some of the instruments are "antiquated and useless." "No military hospital, however large, is provided with an operating room," and operations have therefore to be done in an open ward or verandah. Fancy an operation for a perforating typhoid ulcer being performed in "an ordinary ward" in the presence of other typhoid cases! But operation theatres appear not to be very necessary, if the following experience related by the Committee is at all common. "In the new hospital at Colaba (Bombay!)" the Committee saw a room, above the door of which was painted, "Medical Officer's Office and Operating Room"! Comment is needless.

The Committee go on to contrast the fine operating rooms and aseptic appliances of the civil branch of the Indian Medical Service, and say that if it is necessary to "provide" these for the Natives of India, it is equally necessary to provide them for British Troops Hospitals. Most certainly, but we would point out that except in the Presidency towns the appliances and aseptic equipment of the hospitals have almost invariably been collected together by the energy and surgical repute of the Civil Surgeons in charge, and the money has been collected by subscriptions, or from the local municipalities by the energy of the Civil Surgeon of the district. The modest list of surgical instruments given on page 76 of the Report will not strike a Surgeon as erring on the side of extravagance. Even if a luxury like a glass operating table is not needed, the Committee might have gone further than "an operating table made of wood, which if kept clean and reserved for the purpose for which it is intended, is nearly as safe as glass." (The words in italics are expressive of much.)

The economical mind of the Committee is shown in their recommendation of an excellent but cheap steriliser, devised by Lieutenant-Colonel Whitehead, R A M C, which, in the Sialkot bazar, costs no less than Rs 4-8-0!

Then follows a list of surgical equipment with remarks. Potain's aspirator, one is recommended for each station, at present one has to be borrowed from "district head quarters," metallic bougies are to be abolished, so also Holt's dilator and to be replaced by urethrotomy instruments, one Vulsellum for each station (not each hospital) is recommended, the set of spare sounds is to be abolished, caustic cases, we read, are too liberally supplied, as also *camel hair pencils*, we should have thought that for the treatment of granular lids, &c, the supply could not be too great. We are glad to see that the obsolete forms of ophthalmoscopes are to be abolished. It is about time. These venerable instruments might well be relegated to some surgical museum, along with the army pattern screw hypodermic syringe. It is not easy to see why the following articles should belong to the "district loan equipment" instead of to each hospital, a tonal guillotine, a polypus snare, case of spectacle lenses, a Politzer's bag, an Eustachian catheter, a liver abscess trocar, a Paquelin's cautery, a set of Murphy's buttons, and needles for ruptured pneumum. Fancy a medical officer who has a ruptured perineum case having to wait till he has borrowed needles from the district head-quarters!

The report concludes by recommending forms of X ray apparatus.

We have quoted enough to show that this Committee have done a very useful work in thus exposing and bringing to light the numerous and serious deficiencies of the military hospitals in India. We sympathise with medical officers who have been compelled to work under such adverse circumstances. It will come with a surprise to many of our readers that such a state of things has been allowed to exist so long.

We can only hope that the labours of this Committee will not be in vain, and that the military authorities will at once set about removing these anomalies.

In conclusion, we congratulate Colonel De la Cour Corbett and his Committee on their elaborate and painstaking report, and we can but express the hope that it will be a landmark in the reform of the military hospitals of India.

THE ANNUAL JAIL REPORTS.

The bad health of the general population of India during the year 1900 finds itself generally reflected in the death rates in the jails, which were as follows —

Bengal	40 3 per mille	Bombay	50 8
N W P & O	22 1 " "	Centl Prov	68
Punjab	23 7 " "	Assam	22 8
Burma	25 4 " "	Madras	25

The high death rate in Bengal was continuous throughout the year, and in almost every jail as was also the case in the free population, where the death rate rose to 36 per mille as compared with 31 of the previous year. That the high jail death rate was chiefly due to the general unhealthiness of the season is clear from the fact that in the sub jails or under trial lockups where prisoners are rarely kept more than a couple of weeks, the death rate was no less than 93 per mille as compared with 29 per mille in the previous year, and more over the death rate for undertrial prisoners was 47 as compared with 39 for convicts. Moreover cholera in 1900 attacked no less 18 jails, causing 78 deaths, and above all we have the factor of overcrowding which never fails to make its influence felt when the general health is below par. Moreover the death rate of prisoners under six months in jail was 58 per mille, a figure far exceeding those for long term prisoners. As regards overcrowding the fact must be admitted, the total number of convicts having risen from 15,916 in 1891 to 20,759 in 1900, and an increase in prisoners is seen in 32 out of 46 districts. Most of the Central Jails, as usual, had death rates below the provincial average viz Alipore 29, Presidency (Native), 21, Rajshahye, 19, Buxar, 21, Bhagalpur, 26, Dacca, 34, and Hazaribagh, 32 per mille. As regards the chief diseases, cholera which caused 67 deaths in the jails and 11 in the sub jails was almost always traced to importation from without in newly admitted prisoners or under trials attending Court. The number of cases of dysentery rose to 5,616, with 180 deaths, against 3,832 and 103 deaths in the previous year. The death rate from this disease was specially heavy in Daltonganj, Faridpur, Barisal, Angul, Rangpur and Chittagong. The case mortality from dysentery is low, only 3 per cent, higher than recent averages in Bengal, but lower than 7 per cent, which is the average for 5 years for all India. This rate varies enormously, and thus we think points to one factor in the death rate viz, late admission to hospital. It cannot be too clearly understood that if we wish to keep down dysentery death rates early admission and prompt treatment in hospital is imperative. *e.g.*, in the big jail at Dacca there were 666 admissions and only 9 deaths, in Bhagalpur Central Jail, 304 cases and only 3 deaths, Hazaribagh, 234 cases and 9 deaths, Jessore, 282 cases and 1 death, Hooghly, 303 cases and only 4 deaths, Alipore, 488 cases and 9 deaths. Compare the above figures with the following Mymensingh, 99 cases with 11 deaths, Faridpur, 272 cases with 14 deaths, Barisal, 274 cases with 19 deaths, Cuttack, only 48 cases with 3 deaths, Angul, only 17 cases with 3 deaths. Thus we believe points to delay in admission of cases to hospital, or what is worse non admission of mild cases, which medical subordinates love to treat in what they absurdly call the "convalescent gang" with the consequence that a convict comes finally to hospital for a relapse and never leaves it alive. Early and prompt treatment will reduce dysentery in ordinary years and of the ordinary jail type to a disease of very low mortality. We cannot here find space for any remarks on the causes and prevention of jail dysentery, the recent revelations of dysentery in the London Asylums show that the matter is not a simple one. And we look forward to the long promised Laboratories for Central Jails to help us to solve this problem. We regret to find in the Bengal tables no less than 238 cases and 24 deaths under the vague heading anaemia and debility. Anaemia we can partly understand, but "debility"! Tubercle of the lungs is becoming a more important factor in jail mortality every year—a fact we pointed out more than 8 years ago in these columns. A somewhat careful investigation into the question of tubercle inclines us to the view that much of the undoubted increase within jails in India in the past decade is due to more accurate diagnosis, but this is not all, and the question of the evil influence of overcrowding in this connection is one deserving attention, but on this point we reserve our remarks for the present. The number of cases of pneumonia was increased. Cerebro spinal fever caused 22 deaths out of 32 cases, it chiefly affected Bhagalpur Jail. We are glad to see that Government recognises the possibility of an early increase in the accommodation of the Bengal jails.

In the jails of the North-West Provinces and Oudh the increase in the population of the jails is also marked, the total figures being 30,893 at end of year, but the death rate is certainly satisfactory being only 22 per mille, the lowest recorded figure except 17 for the exceptionally healthy year 1893. The death rate of the general population has been 31 1 per mille. Here again the Central Jails show very satisfactory

figures. Bareilly, 21 5, Lucknow, 11 1, Agra, 21, Patna, 16 5, Allahabad, 16 1, Benares, 30.

Cholera only claimed 9 admissions and 6 deaths, and dysentery 1,509 admissions and 132 deaths, or a case death rate of over 8 per cent, which is very high compared with the rate of 3 per cent in Bengal. This is the more remarkable because the Inspector General notes that the disease was probably of a less fatal form than in previous years. He says "The severe form of sloughing dysentery is certainly not so common as it used to be." This great improvement is attributed to the isolation of dysentery cases, and the destruction of stools, clean flour (*atta*) and a purer water supply. The steady decline in the number of dysentery cases in these Provinces is certainly encouraging. When we examine Statement No. XV we find, we think, some indication that what we have said of Bengal is true also of the North-West Provinces and Oudh *e.g.*, in the Bareilly Central Jail there were only 8 cases and 1 death, in admirable condition of affairs, in Lucknow we had 40 cases with 4 deaths, in Benares, 81 cases with 6 deaths, Patna, 93 cases with 7 deaths, and Agra, 220 cases with 16 deaths. Whereas in the Bareilly District Jail we find 149 cases and 14 deaths, Izabadd, 60 cases and 1 death, Amazgarh, 19 cases, but 7 deaths, Benares (district), 49 cases, but 6 deaths. Cawnpore only 20 cases, but 3 deaths, Patna (district), 31 cases and 4 deaths, Jhansi, 21 cases and 1 death, Banda, 25 cases and 2 deaths.

We are astonished to find so much difference of opinion as to the infectious nature of dysentery among medical officers in the North-West Provinces and Oudh. "The number of Superintendents for the disease being non-infectious equals those who consider it infectious," says the Report. Perhaps infectious is a vague term to use nowadays, but we most strongly maintain that in every sense of the word dysentery is a communicable disease and any attempt to deal with it either in Indian jails or English asylums on any other hypothesis will only result in utter failure. The most rigid disinfection of stools, clothes, bedding and everything connected with dysentery cases is in our opinion, imperatively necessary, if we wish to control this disease, and stamp out its worst types. The dieting of the patients is most important, and we agree with Colonel G. Hall, I.M.S., when he writes that "a piece of *chapatti* eaten when it should have been avoided, has caused the death of many a prisoner."

The question of pneumonia and the closing up the gratings of wards in the cold weather is also a debated one in the North-West Provinces and Oudh. Eighteen Superintendents are against bricking up the enclosures. Lieutenant Colonel Giles, I.M.S. (retired), writes "I have always disapproved of this plan for concentrating and rendering efficient the germs of an undoubtedly infectious disease." We strongly incline to Colonel Hall's conclusion that "leaving the gratings open certainly does not tend to give prisoners pneumonia." In our opinion, fresh air will do no harm, and few jail wards have enough, well controlled ventilation is what we want, so that there can be abundance of fresh air without draughts. Modern views on pneumonia incline us to pay more attention to plenty of fresh pure air than to chills; moreover, how much of this pneumonia was of the *influenza* type?

Tubercle of the lungs showed 315 admissions and 84 deaths, a notable increase in the admissions. The admissions to hospital for this disease in the North-West Provinces and Oudh have increased from 37 in 1891 to 66 per mille in 1899 (*Indian Medical Gazette*, September 1900, p. 358).

The jails of the Punjab show also an increase in the sickness and mortality in 1900. This is ascribed to the poor state of health of prisoners on admission to jail and to the great wave of malarial fever last autumn in the Punjab (see *Indian Medical Gazette*, February, 1901).

Nevertheless the death rate of 23 per mille is very satisfactory, especially when it is considered that the death rate of the free population was no less than 47 6 per mille. The progressive and steady decline in the Punjab jails mortality is most satisfactory from 35 per mille in years 1891-95 to 22 only in the past 5 years.

A virulent form of dysentery followed an epidemic of malarial fever in Ludhiana Jail, 59 cases with 4 deaths, its cessation is ascribed to the issue of fresh potatoes and onions.

Cholera, which for 9 years had spared the Punjab jails, broke out in 1900 in some jails. At the extra mural jail, Mung Rasul, 30 cases, 9 fatal, were met with. Well deserved praise is given to Captain E. R. Parry, I.M.S., the Superintendent, for his management of the outbreak. As regards malaria, the prisoners suffered, but nothing like so severely as the general population during the very severe and widespread outbreak of last autumn. This is probably correctly attributed to the prophylactic issue of quinine in all the jails. We are glad to see that control experiments on the use of quinine are to be made this year. Dysentery accounted for 63 deaths out of 1,369 cases, or a case mortality of 4 6 per cent., a moderate death rate. Of the 33 jails in the Province deaths from dysentery took place in only 18. On the whole dysentery was not a very marked feature in the medical

history of Punjab jails during the year. The continued decrease of dysentery in Mooltan Central Jail is very satisfactory. As regards Tubercle of the Lungs we are glad to see Colonel Bate, I.M.S., is of opinion that this disease is one of the greatest importance in jails, and that there is need for adequate means of segregating cases among prisoners.

As regards pneumonia, a rise was to be expected in view of the unhealthy malarial autumn. Attention was given to ventilation and avoidance of overcrowding. We note 2 cases of enteric fever and 2 of cerebro spinal meningitis, and no less than 20 deaths from sunstroke, a few details about these sunstroke deaths would appear desirable.

The two jails at Jaipur appear to have suffered in the general unhealthiness of that State. The population was decidedly increased and the mortality among the prisoners rose from 22 in 1899 to 42.9 in 1900. The Residency Surgeon states that the question of overcrowding is a very serious one. We note in Appendix VI that there appears to have been a very severe outbreak of cerebro-spinal fever in these jails, at least we find the following deaths returned as "acute meningitis"—January, 6 cases, February 3, April, 1, June, 4, December, 2. Also during the year 15 deaths from pneumonia are recorded—a more detailed account of this meningitis outbreak is certainly desirable. Sixteen deaths from meningitis and 15 from pneumonia in one year in a jail containing about 850 prisoners is certainly excessive and calls for inquiry.

Again in Madras we find serious and marked overcrowding, the figures being the largest for the past 18 years. The death rate rose from the exceptionally low figure of 16 per mille in 1899 to 25 per mille in 1900. The fluctuations in the death rates in Madras jails is remarkable, the average for the past 10 years has been about 27 per mille, but has varied from 16.9 in 1899 to 47.5 in 1897. The death rate in the Central Jails has been 22 compared with 30 in the District Jails and 27 in the Sub jails. We note that malarial Rajamundry, which had a death rate of no less than 123 per mille in 1897, has fallen to only 14 per mille in 1899 and 13 in 1900—an excellent record. The big jail at Vellore maintains its admirable record for good health, this year being only 10.6 per mille.

Cholera caused 32 admissions and 19 deaths, but only appeared in an epidemic form at two jails.

Dysentery caused 635 admissions and 36 deaths, or a case mortality of 6.7, which is about the five year average for all Indian jails (7 per cent.). We here find in marked degree the differences upon which we commented above, while Rajamundry had 117 cases with only 1 death and Cannanore 100 with 5 deaths, Trichinopoly had only 20 cases with no less than 7 deaths (a very high death rate), Coimbatore had 4 deaths in only 21 cases, Vizagapatnam had no less than 9 deaths in 61 cases. These figures either point to an extraordinary difference in the type of the disease, or, as we said above, to a difference in the recognition of the importance of early treatment before the cases are allowed to become of the chronic relapsing type. We note that at Vizagapatnam Jail no less than 11 cases of enteric were admitted with 5 deaths, the disease is recorded as having been acquired before admission. This points to a somewhat unusual (compared with Northern India) prevalence of enteric among the inhabitants (see discussion, *Indian Medical Gazette*, page 116, March 1901). The number of cases of malaria shows a decline, Rajamundry showed 21 per cent. of its admissions from this cause. The work of Captain Fearnside, I.M.S., on malaria is referred to in terms of appreciation in the Report. The remarks on the prophylactic use of quinine are not very satisfactory, the drug appears to be used in a half hearted way, "with fair regularity" says the Report. The Inspector General, Lieutenant-Colonel W. O'Hara, I.M.S., directed attention wisely to the removal of all sources of infection by means of mosquitos. Overcrowding again we read of in the Report on the prisons of the Central Provinces. The death rate was very high, being 63 per mille. The excessive sickness was seen all over the Province, the 9 Central Jails had also had records. Nagpur, which had the fine record of 8 per mille in 1899, fell off to 45 in 1900, Jubbulpore had a death rate of 48 and Raipur 66 per mille. Nagpur had unfortunately a bad cholera outbreak, causing 12 deaths, it had also 5 deaths from dysentery out of only 47 cases, 5 deaths from tubercle, 1 from anæmia, 3 from pneumonia, and 6 from diarrhoea.

Raipur had 8 deaths from dysentery out of 46 cases, while Jubbulpore had 32 deaths out of 137 cases of this disease, which must evidently have been of the severe famine type. Thirteen deaths under such a vague heading as "anæmia and debility" is strange at Jubbulpore. We find from the report that 22 cases and 21 deaths took place from cerebro-spinal fever, which we know was very severe at Raipur (see *Indian Medical Gazette* 1900, pp 210 and 258). In some of the District Jails the dysentery appears to have been of a very severe type—probably famine dysentery, 11 deaths out of 39 cases at Balaghat, 10 deaths out of 66 cases at Betul, 16 deaths out of 91 cases at Sambulpur. The case mortality for dysentery for the Central Province, was very high, over 15 per cent., or

more than twice the Indian Jail average. This points in all probability to the severe type, so common among the famine stricken. It is curious how high the case death rate for tubercle is in these provinces, 30 cases with 27 deaths. Are all tubercle cases admitted to hospital at the beginning of the attack? Pneumonia caused in all 22 deaths out of 78 cases. Forty four deaths from diarrhoea points to a prevalence of the fatal form known as "famine diarrhoea." The Jay Inspector General notices that the unusual number of deaths from tubercle in Bhandara, anæmia in Jubbulpore, and diarrhoea in Chindwara may possibly be explained by differences in diagnosis rather than in the actual disease. This is a point on which it is only necessary to draw the attention of medical officers. The improvement in the health of Jubbulpore Jail is satisfactory.

An impression generally exists that the province of Assam is especially unhealthy, but recent reports show that this is by no means the case, and its vital statistics for the last few years compare very favourably with those of Bengal. The same remark applies especially to the health of the prison population in 1900, when the death rate reached the satisfactory figure of only 22.8 per mille, the lowest ever recorded in Assam, and only half the average for the past ten years. The total number of prisoners in Assam, it must be remembered, could be put easily inside a small Central Jail in any other province, the total being about 1,600, and of these over 500 are in the Sylhet Jail. The marked improvement is due to the almost entire absence of cholera (only 1 case) and to the greatly reduced sickness in Gauhati and Sylhet Jails. The Tezpur Jail showed an increased mortality as did the free population and the lunatics in that district. Diarrhoea and dysentery were very prevalent in Nargang District from July to October—the rainy months—when dysentery almost always reaches its highest point. The Inspector General and the Sanitary Commissioner hesitate to pronounce on the causes of this sudden and marked improvement, but the Chief Commissioner has little difficulty in attributing it to "the greater care and attention which are now bestowed on the health of prisoner, to the increase and betterment of their diet and to the prohibition of extra-mural labour." Mr. Cotton says "he will be disappointed if the figures rise again much above their present level, or over approach the death roll of past years."

We confess to not feeling so optimistic. As to the causes given by Mr. Cotton, we know of years which were bad and years which were good when the care and attention given by the Medical Superintendents was equal and all that could be desired. As for the prohibition of extra-mural labour this certainly seems an excellent step from a health point of view, but it is by no means clear that it had anything to do with the good results in Assam jails in 1900. Firstly, it was only "partially stopped during the year" (Report, p. 9), secondly, of 12 convicts who died in Sylhet (i.e., 12 out of 32 deaths of convicts in the whole province) only 3 of them had been employed on extra-mural labour within 3 months of their death. Again in 1899 out of 33 deaths only 3 had been employed on extra-mural labour, so that, however objectionable extra-mural labour may be from the point of view of tasks and discipline, the records do not support the view that it has been prejudicial to health. When we analyse the deaths, we find 1 from cholera, 9 from dysentery, 8 from malarial fever and its sequelæ, 2 from tubercle, 2 from anæmia and debility (?), 2 from general diseases, 4 from pneumonia, 2 from respiratory diseases, and 1 from diarrhoea. The 9 deaths from dysentery out of 254 cases is not excessive, and 8 deaths from malarial cachexia can be understood, but 4 deaths out of 14 cases of pneumonia gives a high percentage. We can find nothing in the Diet Scale Statement to show that better diets than usual were given in 1900, though the Report shows that medical officers made free use of the convalescent and special gang diets for weakly prisoners, animal food, usually fish, was given four times a week and the scale of rice or *atta*, &c., reduced accordingly. The high cost of food is the chief cause of the increased expenditure on rations. We are glad to see that steps were taken to dry vegetables in the cold weather for use during the rains, but as this practice has been much misunderstood (in other places than Assam), it may be well to say a few words on it. In the first place only the best English vegetables should be selected, e.g., turnips, mangle wurzel, beet, cauliflower, giant senkale, &c. It is useless to dry ordinary country vegetables, secondly, they should be very thoroughly dried in the sun, thirdly, the bags containing the dried vegetables should be taken out about once a fortnight during the dry months and dried again, and rotten or damp pieces picked out and thrown away; above all the bags must be stored in a dry godown and not piled on the ground. When these precautions are neglected, as they often are by jailers, the dried vegetables will be rotten and unfit for use, but if so, it is the fault of the jailer, who should be held responsible.

The reports for Bombay and Burma have only just come to hand, and will be noticed in next issue.

THE MADRAS MATERNITY HOSPITAL REPORT

The medical institutions of Madras have a custom, which might well be imitated elsewhere, of printing the reports of the work done in each hospital during the year. This gives others an opportunity of knowing the amount of, and nature of, the work done in these institutions which, if not thus published, would be "pigeon holed" in the office of the Administrative Medical Officer.

We have received a report on the Government Maternity Hospital, Madras, which is a record of an enormous amount of good work which certainly deserves notice. The total number of obstetric and gynecological cases treated during the year 1900 reached the large total of 3,825.

Of the 2,301 obstetric cases 1,566 were natural deliveries, and the vast majority (1,517) were occipito anterior presentations. Of labours classed as difficult there were 196, of which 133 necessitated the forceps, and 23 cephalotripsy. Of the proter natural labours 60 are recorded, viz., 32 breech, nine foot, 12 arm, one shoulder, four head and hand, two head and foot presentations. Twins occurred 43 times, and post partum hæmorrhage 28 times. There were 22 cases of retained membranes, 28 of puerperal eclampsia, ten of ruptured uterus, fifteen descents of funis. There were also 84 cases of abortion from various causes, 13 of which are classed as "simple," and thirteen due to macerated fœtus. Of obstetric operations there were 333, among which there occurred 36 evacuations of the uterus, 30 for adherent placenta, 2 cases needed the use of elastic water bags, and 169 cases where the forceps were required. There were 24 instances of podalic version, 26 of extraction, 40 of cephalotripsy, five of decapitation, two of symphysiotomy, three Cæsarean sections, and one abdominal section for extra uterine gestation. On the average there were 192 confinements per month in the hospital.

The following table classifies the deliveries

Natural labours	1,566	or	67.9	per cent
Difficult "	196	"	8.5	" "
Proternatural	60	"	2.6	" "
Complex	398	"	17.1	" "
Abortions	84	"	3.0	" "

The greatest fecundity of all classes was between the ages of 20 and 24 years. The percentage of primipare was 20.9, and the average duration of labour in primipare was twelve hours and in multipare 8.8 hours. Three women under fifteen years of age were delivered and only three over forty years. It is to be noted that there were no deaths among those delivered by forceps, nor among 23 in which cephalotripsy was performed.

Of the 43 cases of twins 77 children (33 males and 44 females) were born alive. Plural births occurred once in 62 labours. The average for past 20 years is one case of twins in 55 labours. Of these 441 cases of twins in 20 years, the sex proportion was, both males 147, both females 153, and both sexes 141, that is, about 33 per cent for each class.

These figures support Galabin's statement that, "on the whole multiple pregnancy appears to be commonest among the fertile races." In Madras it is 1 in 55, in Ireland 1 in 60, and in England 1 in 100 (Galabin, p. 255).

The proportion of triplets in the last 20 years was 1 in 4,860 births, whereas Galabin gives 1 in 6,000.

In October and September, when the hospital is crowded, the greatest vigilance is required to guard against septic conditions. The number of septic cases was 70, or 3 per cent, which is attributed to overcrowding of the wards chiefly, two cases of sepsis were traced to the dirty nails of a student, and many are due to previous examination by Native midwives outside the hospital.

There were only thirteen cases of ophthalmia neonatorum out of 2,804 labours, all cases were very slight. Protargol was used instead of silver. There were 43 abdominal sections done during the year, five of which died. The operations were done for various diseases, chiefly ovarian cysts, diseased appendages, fibromata and extra uterine gestation. Eleven other exploratory laparotomies are recorded and 61 operations on the uterus, ten for pelvic abscess and 71 plastic operations. On the whole the report is a record of extremely good work, and reflects the very greatest credit on Lieutenant-Colonel A. J. Sturmer, I.M.S., and his staff.

THE ASSAM DISPENSARIES REPORT

This report is short enough to satisfy the most exacting, consisting as it does of not quite two pages. There are 128 dispensaries now open in Assam, and we are glad to note a steady increase in the number of patients attending these institutions. We also see an increase in the number of surgical operations, and these include 23 cataracts, 67 amputations, 152 obstetric operations, one laparotomy (done by Major G. Duncan, I.M.S.), and one ovariectomy, writes Colonel Carr Calthrop, is still lamentably small, but so much of the Civil Surgeon's time is taken up with inspections of distant dispensaries and tea gardens that progress in surgery must necessarily be slow.

So far the women in Assam have not taken advantage of the improvements made for their benefit in the dispensaries.

The small Lopor Asylum at Sylhet was well managed as usual. A large number of cases attended the newly started Railway Dispensaries. We note eleven lithotomies and one litholapaxy were performed, but stone is notoriously uncommon among the inhabitants of Assam.

THE ASSAM VACCINATION REPORT

The decline of small pox in Assam has made the people cease to dread it, and there is a slight falling off in the number of vaccinations performed. In the Garo Hills Dr. Baneroff has vaccinated so enthusiastically for the past few years that it is not surprising that he has had less material left to work on in 1900. Captain A. Leventon, I.M.S., Civil Surgeon of Sibsagar, inspected 5,899 cases vaccinated and Dr. Baneroff, 5,191, both very creditable performances. The average percentage of success for primary vaccination has been 91.2 per cent and 88 for secondary vaccination. The former figure is probably correct, but the average for revaccination is high, and is to be accounted for by the average being drawn from very small actual figures. Thus one successful revaccination in the District of Cachar gives a percentage of 100. It appears that nearly 70 per cent of the children available for vaccination in towns where the net is in force, are protected.

The lymph made at the Shillong vaccine depot has a deservedly high reputation, and no less than 357,577 tubes were loaded during the year, an average of 1,136 tubes were obtained from each calf. At one time of the year a supply of lymph was inferior and not successful, but this was promptly discovered and put to right, and the Assam lymph regained its high standard of efficacy. Experiments are being made in storing glycerinated lymph.

BOMBAY LUNATIC ASYLUMS

The Surgeon General with the Government of Bombay writes that "so far as structural defects and general organization and equipment allowed, the results of the management of these institutions were satisfactory and creditable to the Medical Officers in charge and their subordinates." In spite of over-crowding, the health of the female lunatics was better than that of the males. In all asylums, however, there was a considerable increase in the amount of sickness, there being an increase in the amount of cholera and diarrhoea with a decrease in the fever prevalence. Except at Hyderabad the source of the cholera infection was not traced. Diarrhoea and cholera accounted for 33 deaths.

The daily average strength of the population in all the six Bombay asylums was only 779, a very small figure for a big Presidency, which shows the small numbers of certified lunatics among the people of India.

The percentages of cured to admissions were, cured 25 per cent, and died 45 per cent. Of criminal lunatics there were 132, of whom 24 were tried and acquitted on grounds of insanity, 82 were insane and found incapable of making a defence, and 26 were found to be insane after imprisonment. There were 41 Europeans military inmates, and 14 civilian Europeans. Of the 255 inmates admitted during the year, 130 were for mania, acute and chronic, 83 for melancholia, 34 for dementia, 18 idiocy and 17 for delusional insanity, and 3 others. There was only one case of general paralysis under restraint during the year, showing, as we have often pointed out, the rarity of the disease in Indians. Of the alleged causes 443 were physical and 140 moral in their nature. Among 70 cases, charged with crimes of violence, the cause was attributed to *ganja* in 10, epilepsy in 8, grief in 6, and to various causes in the rest, except in 36, where the causes is stated to be unknown.

There is no account in this year's report of the industries or amusements of the lunatics beyond the remarks that "there is an absence of facilities for occupation and of intelligent supervision. No mention is made of any scheme for a Central Asylum as in Punjab and Bengal.

THE BURMA HOSPITALS REPORT.

THREE new hospitals were opened during the year, making a total of 113. The total patients increased 5 per cent. Endeavours are being made to attract more female and children patients, and municipalities have been urged to employ nurses trained at the Dufferin Hospitals. Care is being taken to extend the usefulness of the Rangoon Dufferin Hospital. Twenty-four midwife pupils were trained during the year since the institution started, 164 women have been trained, fourteen of whom are in the employment of Municipal hospitals. We are glad to note a satisfactory increase in the number of important surgical operations. Stone and cataract being rare in Burma as compared with Northern India, the figures will never reach the proportions of hospitals in Punjab or Sindh, but we are glad to see 26 cataracts, 6 lithotomies, 9 crushing operations, 32 hernia operations; 17 laparotomies,

20 for abscess of liver, 19 trephinations, 1 gastro enterotomy, 2 colotomies and 5 ovariectomies. Most of these important operations were done by Captains Duer, Barry and Rost, I M S. We note that Miss Cohen, M D, of the Duffield Hospital, did 1 ovarian cyst and 5 removals of uterine appendages in addition to many other gynecological operations.

The chief diseases of patients attending the Burma hospitals are, as elsewhere in India, malarial fevers, ulcers, worms, and eye diseases.

Correspondence.

INVOLUNTARY IRIDECTOMY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In the *Indian Medical Gazette* of July 1901, I am glad to see Major Tull Walsh I M S., calls attention to the involuntary performance of iridectomy in making the incision for cataract extraction.

In my experience, a small one, I have found the occurrence rather frequent. I am surprised that this has not been mentioned before, especially by those who are against the performance of an iridectomy. It would be interesting to hear more from our great operators as to why this accident happens and how it can be prevented. Is it due to want of skill, or want of complete anaesthesia? (as Major Walsh suggests) Dilatation of the pupil by atropine before operation appears to me to favour it.

Yours, &c,

RANGOON

C DUER, M B., F R C S,

Capt., I M S

BERI BERI IN TAMILS

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I have to thank Captain Barry, I M S., for his answer to my question concerning the nationality of his beri beri cases. The contrast between the two countries is remarkable, and perhaps, if this were followed up, the causation might be traced.

I notice also in the same (May) number of the *Indian Medical Gazette* some editorial remarks alluding to the suggestion of Ross that the cause might be arsenic.

Some in this country, where tin is so plentiful, have thought that metal might be the cause. I think that the insolubility of the ore of tin may exclude that idea.

With regard to the suggestion of Ross that it might be arsenic, I think that the frequency of pigmentation and of Herpes Zoster might serve to distinguish arsenical neuritis from beri beri.

For a long time it has been in my mind that some metal, neither tin nor arsenic might be the cause of beri beri. Tungsten exists in fairly large quantities, selenium, which, I believe Tannichliffe found in some beers, and probably several other more or less rare metals, might be found, and of many metals, I imagine that nothing is known concerning their effects on man.

The first thing that struck me was that most of the writers of the jungle, and therefore most of those drunk by miners, and those in which they are working, are acid, and therefore capable of dissolving a metal. Then it occurred to me that, if the causes of peripheral neuritis were examined, it would be a fairly close race between the organic and the inorganic causes.

The fact that the poison seems to be a cumulative one points as strongly to a metal as to an organism. There seems to be no immunity after attack, which is against an organism.

If contaminated foods, such as rice, are the cause, they are as likely to be contaminated by a metal as by an organism. In fact, nearly everything that has been advanced concerning the aetiology of the disease, except the theory of the deficiency of nitrogen, which is not borne out in this country, as the Chinese have a more nitrogenous diet than the average Tamil—could, I think, be held as well on a metallic as on an organismal idea.

A metallic theory of beri beri might be useful until disproved, or an organism found, and it hardly requires to be pointed out that, if a fowl, into which an organism has been injected, staggers before it dies, it is not necessarily beri beri of which it dies.

I have not the apparatus, nor probably the skill, to work out this question, but I think it quite possible that the cause of beri beri will be discovered in the chemical rather than in the bacteriological laboratory.

Yours, &c,

PERAK,
8th August.

J TERTIUS CLARKE,
District Surgeon, Lower Perak

LITHOLAPAXY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—Mr D F Keegan in his paper on Assendelft's work on Stone in your August number, refers to my paper on Stone published in your special Stone number. As he makes and publishes inferences detrimental to my good name as a surgeon and suggests that I probably march with the lithotomists, I hope you will kindly allow me a short space to correct this impression. Although I am a keen follower of Bigelow, nevertheless I detailed the advantages of lithotomy for the following reasons: (1) Because I wished both sides of the question to be heard, and the subject to be well thrashed out, (2) because lithotomy is still often done in India, and I sought to find the reasons which led men to do it. In two big Indian provinces more lithotomies than litholapaxies were done during the year, and without good reasons this was not creditable to the general spread of advanced surgery among us (I have since heard that this is due, in many cases, to the want of suitable lithotrites, a want which is being rapidly supplied), (3) because I wished to point out to lithotomists that in spite of the apparent advantages of lithotomy, yet litholapaxy had a far lower death rate, so that only under exceptional circumstances was a surgeon justified in cutting his patient.

Dr Zum Busch, although he refers to one of the advantages claimed for lithotomy, yet he saw the gist of my article and correctly described the writer as an ardent litholapaxist.

Yours, &c,

G T BIRDWOOD, M A., M D.,

Captain, I M S

APPENDICITIS IN BENGAL

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In your review of the Annual Report of the Charitable Dispensaries of Bengal you note that no mention is made of any operation for appendicitis. In my experience of mofussil practice cases of appendicitis of so severe a nature or recurring character as to require operation are rarely met with. One reason for this may be that the worst cases running an acute course and presenting to the village mind no sign calling for surgical interference are never brought to the dispensary but are treated at home by the local hakim. The following case occurring in my own compound is instructive. On a morning of July when about to go on my round I was asked to see one of my grass-cuts, a young boy of about 20 years, who had been complaining of pain in the belly for the past 30 hours, previous to which he was about. I found him collapsed with all the symptoms of acute peritonitis. He was removed to hospital, but died the same afternoon. Liver dullness was present, and nothing was elicited from the history pointing to the appendix. His condition from the first forbade any exploratory operation. A post mortem examination revealed a condition of acute purulent peritonitis, a lengthy appendix in which one inch from the apex was found an ulcer with sloughy perforated base. No concretion or foreign body was discovered to account for the presence of the ulcer. On remonstrating with my servants for not calling my attention to this case sooner, they excused themselves by saying that they did not know he was so ill, as he had not complained very much, nor had he been sick.

Should one or two successful operations be performed for this disease, the news will spread, and villagers suffering from unrelieved abdominal pain will come more frequently and at an earlier stage for advice. Amongst such cases there will, undoubtedly, be cases of appendicitis requiring operation.

Yours, &c,

CHITTAGONG,
14th August 1901

J T. CALVERT,
Major, I M S

CASE OF SUPRA PUBIC LITHOTOMY

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—In obedience to the orders of the Director General, I M S., India, I beg to forward the notes of a supra pubic lithotomy case for favour of publishing them in your valuable paper, and hope you will kindly send me one copy of the same.

"A boy, aged seven years, was admitted in the hospital with symptoms of 'calculus vesicae.' On sounding under chloroform a large and hard stone was detected. Same was confirmed on bimanual examination. The largest lithotrite (No. 6), that could be introduced, could not catch the stone. Its hard nature and large size suggested the operation of supra-pubic lithotomy. This was done in the ordinary way, without inflating the rectum. The stone was removed, vesical wound was left open, but the upper part of perietal wound was sutured. A drainage tube was inserted in the lower part

of wound This was removed on the fifth day, and the urine passed per urethram on the twelfth day after operation Child was discharged cured on the eighteenth day after removing the stone

The stone measured 2 inches in length, 1½ inches in width, was oval in shape, consisted of oxalate and urate, and was chiefly smooth on its surface It weighed 14 drachms (810 grains)

Duration of the disease was four years

PINDIGHER, RAWAL } Yours, &c,
PINDI, PUNJAB } MIR HIDAYAT ULLAH,
26th July 1901 } Assistant Surgeon

STONE CASES AT DURBHANGA

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The following cases of lithotomy are of interest —

1 Bisvesar Thakur, four, Hindu child Stone could not be gripped by the largest lithotrite that could be passed Left lateral lithotomy performed on the 6th May 1901, and the patient was discharged cured on the 1st June 1901 The stone weighed dry 2 ozs and 3 drs

2 Chulkar Meah, fourteen, Mahomedan male Litholapaxy was tried but in vain The stone could be caught, but it was beyond the locking limit of the largest lithotrite that could be easily passed by the urethra Left lateral lithotomy performed on the 10th June 1901, and the patient was discharged cured on the 2nd July 1901 The stone weighed dry 1 oz.

3 Chakowry Tewary, seventy-eight, Hindu male Had been suffering from stone for over fifteen years, the stone could not be gripped by the largest lithotrite passed per urethrum Supra pubic lithotomy was performed on the 11th June 1901, and a stone weighing 18 ozs was extracted When dry it weighed 16½ ozs, its short circumference was 9 inches and the long one 10½ inches The patient died on the evening of the 19th June 1901

Remarks—Litholapaxy is the routine operation for stones both in boys and adults in this hospital There are five lithotrites for children and three for adults In little over a month three cases successively came into the hospital in whom 'urethral litholapaxy' was out of the question Perineal litholapaxy is not performed in this hospital In the first two cases lateral lithotomy and in the third supra pubic lithotomy was the alternative operation performed I have invariably given good results in the lateral lithotomy performed in children I have had no occasion to perform the supra pubic on any child

RAJ HOSPITAL, } K P LAHIRI, M.B.,
DURBHANGA } Assistant Surgeon
18th July 1901 }

SUGGESTIONS FOR IMPROVEMENT OF A FIELD HOSPITAL SECTION

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—The following report on the contents of the boxes, &c., of a Field Hospital Section was suggested to me by the frequency with which I have found some valuable drug unavailable in the section, and the equal frequency with which I have come across useless drugs that might well be dispensed with I have now done duty with a Field Hospital Section for three years in all, two on the Samana with C 52, N F H, and one in China with B 58, N F H, so that I can claim a certain amount of experience Taking each pannier or package in order, the tables below will, I hope, facilitate an easy survey of the changes I would suggest —

PACKAGE No 1

RIGHT PARTITION

Name of Drug, etc	Quantity	Suggestion
Liq Ferri Perchlor fort.	11 ozs	The label on the bottle should contain directions for converting the Liquor into the Tinct Ferri Perchlor or a strength equivalent thereto
Liq Ammon Ace tat fort.	14 ozs	Should likewise be so labelled that full directions would show how to convert it into the Liq Ammon Acetat B P
RIGHT TRAY Stopper loosener	1	The stopper openers are so fragile that they are easily broken after opening a single bottle The edges should be bound in brass or iron

Name of Drug, etc	Quantity	Suggestion
LEFT TRAY		
Antimonii Tartaratum	1 dr.	This one dram is in an ounce bottle It might be placed with advantage in a tube and this in a tin box Speco would thus be given for another drug
Chrysarobin	iv ozs	This might be expunged entirely It is a useless drug, and in its place I would suggest an equal quantity of Bisolcin
Ext. Lilicis Mas Liquid	1 oz	I mention this drug to draw attention to the fact that there is no SANTONIN in a Field Hospital, a curious omission surely I suggest half an ounce which might replace one of the phials of Luonamin of which there is too much in this box
Potassium Bromide.	1 oz	This 1 oz of Potass Brom is all that a section contains It is not enough, the quantity should be increased to 11 ozs or even 14 ozs
Unguentum Hydrag.	1 oz	This is in a narrow necked bottle It should be kept in a wide necked bottle, and the quantity might be increased to 11 ozs
TIN BOX		
Ligature, flax	½ oz	Might be excluded altogether, as it is not aseptic and can scarcely be rendered aseptic
Ligature, silk	½ oz	This is kept in a piece of blue paper, without any precautions against sepsis It should be kept in a tin airtight box, and might be surrounded by some antiseptic powder
Silver Wire		This also should be kept with some idea of avoiding sepsis It is at present kept in a piece of not very clean looking brown paper
RIGHT PARTITION		
Nitric Acid	11 ozs	The bottles for the acids should bear a label showing how to make the dilute acids of the B P
Sulphuric Acid	11 ozs	
CENTRAL PARTITION		
Phials, English, Common		Instead of two of these some small phials of ½ oz. and 1 oz should be substituted
RIGHT TRAY		
Surgeon's Pocket Book, "Porter's"		These excellent books as now supplied to the Sections are very much out of date, especially in chapters dealing with antiseptics They should be brought up to date, and WATSON CHEYNE'S ANTISEPTIC SURGERY might be added with advantage
Surgeon's Hand Book, "Eschmarch's"		
PANNIER No 1		
Pills		I would suggest as an addition to the pills, a pill for treatment of syphilitic cases, such as a pill of Hydragr Creta 1 gr Dover's Powder 1 gr The treatment of syphilis is entirely neglected in Field Hospitals on the supposition that men with syphilis ought not to be allowed on Field Service But such cases do come in for treatment on Field Service
Tincture Aconite	1 oz.	This drug might be left out entirely, and in its place I would suggest Liq ARSENICALIS 1 oz
No 1 DRAWER		
Hypodermic Syringe	1	This hypodermic syringe is very badly made and invariably goes out of order after a little use

Name of Drug, etc.	Quantity	Suggestion
No 4 DRAWER. Instruments, amputating, Regulation case B.		I would suggest that the rectal trochar and canula be excluded from this case I would also suggest that a bullet forceps for use with small bore bullets be included in the case The present bullet forceps are for use with large bore leaden bullets only, and are useless for Mauser, Lee-Metford, etc., bullets

Tin Box D Drainage tubing	6 yds	PANNIER No 2 Although there is wide tubing and narrow tubing there is none of medium size, which is probably more needed than the other sizes I suggest medium drainage tubing
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STRAPPED IN THE LID Splint long jointed, Laston's	1	This splint is very weak and badly made. The pad cases have a minute opening through which it is impossible to stuff them evenly The openings of the pad cases should be in the sides They should be large and have tapes applied at the edges for closing the openings, when the pad cases are stuffed
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No 3 PACKAGE

FIELD MEDICAL COMPANION Bullet forceps		An additional bullet forceps for small arm and cased bullets should be added
Syringe hypodermic		The hypodermic syringes in a Field Hospital Section are of a very antiquated pattern and badly made More modern and better made syringes should be supplied
Ligatures		The remarks about ligatures in Package No 1 also apply here

No 6 PACKAGE

Splints, arm, angular	1 set.	The pads are most carelessly cut They are very much too narrow They should well overlap the edges of the splint.
Splints arm wire	1 set.	The pads of this also are badly cut, as if by somebody who knew nothing of surgery This is probably the worst made splint in the hospital, all of which are of exceedingly poor workmanship The wire work is so poorly joined that the splint invariably breaks on its first application to the limb
Splint leg, wire Splint leg, wire extension Splint, thigh jointed wire.		All these wire splints have the same fault as mentioned above I would suggest that all junctions be made by wiring and soldering, and not by soldering alone.

No 7 PACKAGE

Splints		All the splints of this package suffer from the same faults as those of No 6 Package They are too weak The pads are too narrow, and so carelessly cut that they cannot be made to fit on the splint at all in many cases Thus the splint elbow jointed wire, had a perfectly straight pad supplied for it made of white felt!
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Name of Drug, etc	Quantity	Suggestion
Iodoform	1 lb	I would suggest that instead of half this iodoform some of the more modern antiseptic powders be used Independently of its odour the antiseptic properties of iodoform have been called into question of late
Ungt Acid Boraci	1 lb in 2 bottles	I would suggest that in place of one bottle of the Unguentum, the powder BORACIO ACID be substituted

No 13 PACKAGE

Essence of Mutton, Brand's	8 lbs	I would suggest that essence of chicken (Brand's) 6 lbs be added to this box There is room for it, and chicken can be partaken of by all religions and castes
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No 14 PACKAGE

Condensed milk unsweetened		This unsweetened milk does not keep well I have had to condemn large quantities of this milk from time to time The sweetened milk is, I consider, on the whole the better There is room in this box for about 6 lbs sugar It would be a useful addition as the Commissariat is not always near the Field Hospital Section, and this sugar could be used until an opportunity arises for indenting on the Commissariat.
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Besides the drugs, &c, mentioned above to replace others less useful, I would draw attention to the absence of some other really useful drugs

Magnesium Sulphate—This most useful of salines is not alone absent in Field Hospitals, but if every medical officer has had my experience in China, one is not allowed to indent for it as P M Os and medical storekeepers refuse to sanction it "it not being allowed for Field Hospitals" There should be some regulation which would permit the medical officer of a Field Hospital to have any drugs in reasonable quantities that may be in the medical store depot, even though such drugs be not allowed according to the Appendices The drugs so obtained could be returned to the medical store depot when the Field Hospital has to march, or they could be handed over to a General or Field Hospital not advancing at the time

Chlorate of Potash—Tablets might be added to the Tablets in Package No 1,

Spirit of Aether Nitrosi—One of the best diuretics in the B P might be placed in Package No 2 among the phials.

Antiseptic Solution—Should have a label with simple directions for the production of the liquor hydrarg perchlor of the B P for treatment of syphilis, &c

Extractum Belladonnae Liquidum—Room for 3i of this could be found in No 2 Pannier, and the bottle containing it should have a label giving directions how to produce the linament belladonna and tincture belladonna from it.

Liquor Strychnine—Room could easily be found for 3ss or 3vi of this very valuable drug

Phenacolin—This drug might be constituted for the anti febrin in the left tray of No 1 Package It is probably a better anodyne than antifebrin and safer than it or antipyrin

Lastly, I would draw attention to some defects in Commissariat and Ordinance Stores Tent pins or pegs are at present supposed to be carried in canvas which must be sewn up before the pegs can be got to remain in it! It would obviously be much more handy to keep all the tent pegs in a basket or two

Ward lamps could be made on a very simple type, four sided, not more than 10 inches high with three glass sides, and to burn a good size stearine carriage candle instead of kerosene oil The candles could be packed in the lamps themselves, and the whole should prove a distinct improvement on the old many windowed and much too large and heavy ward lamps

I have endeavoured in making the suggestions above, to do so in such a way that if they were all carried out, no alteration in the size, number, or fittings of the present Field Hospital boxes would be necessary *

T H DELANY, Capt, I M S,
No 13 53 N F H, C E Force

* Why not supply tablets instead of the above fluid drugs?—Ed, I M G

Service Notes

THE death on 10th August in London of Surgeon General Charles Richard Francis, M.D. (Lond.), M.R.C.P., removes one more of the retired veterans of the Indian Medical Service. He entered the Indian Medical Service in 1844 and retired with the rank of Surgeon General in 1875. Surgeon General Francis was in 1863 the Editor of the *Indian Medical Gazette*, and had a distinguished career in India, having been during his time Secretary to the Surgeon General, Principal and Professor of Medicine at the Calcutta Medical College, Examiner of Medical Accounts (a post now abolished). He was the author of numerous books and pamphlets, e.g., "Sketches of Native Life in India," "To India and back by the Cape," "The Indian Medical Officers' Vade Mecum," "Enteric Fever in India," "Lectures at the Medical College"—numerous papers, e.g., on "Alcohol," "Medical Women for India," "How to Preserve Health in India," "Effects of Opium, Hemp and Tobacco in India," &c. &c. In 1833 he investigated *Mahamari*, which he found to be identical with bubonic plague.

LIEUTENANT CRUDAS, I.M.S., was ordered to Dharmash for duty.

CAPTAIN J. A. BLACK, M.D., Medical Officer, 41st Dogras, has been granted one year's furlough.

MAJOR R. J. MARKS, I.M.S., was granted one month's privilege leave from the 8th September. He is Civil Surgeon of Mirzapur, N.W.P., and Assistant-Surgeon R. N. Dey acts for him.

CAPTAIN J. N. MACFARLANE, I.M.S., and Captain F. A. Smith, I.M.S., are appointed Agency Surgeons of the 2nd class from the 17th May 1901, and Captain V. G. Drake Brockman, I.M.S., from the 19th May 1901.

CAPTAIN J. W. WATSON, I.M.S., is appointed Personal Assistant to the P.M.O., Bombay Command, *vice* Captain Swinton, I.M.S.

THE leave granted to Lieutenant-Colonel J. L. Poynder, I.M.S., Civil Surgeon, Raipur, is made up as follows—3 months' privilege leave, one month and 26 days under Article 291 of Civil Service Regulations, one month and five days for famine, and furlough for 15 months, total 21 months, with effect from the 1st May 1901. This cancels former notification of leave.

WITH reference to G.O.C.O. No. 70 of 1901, military officers in uniform will wear mourning at Viceregal Lodge, Simla, and Government House, Calcutta, and on all occasions when His Excellency the Viceroy and Governor General of India is present, up to the 24th January 1902.

CAPTAIN H. S. WOOD, I.M.S., Civil Surgeon of Sylhet, was granted privilege leave for 1 month and 3 days.

SECOND CLASS SENIOR HOSPITAL ASSISTANT TEGH ALI is promoted to the 1st class, ranking as Subedar, in recognition of his services during the attack on the Malakand on the 26th and 27th July 1897.

THE services of Captain R. Heard, I.M.S., are placed permanently at the disposal of the Punjab Government with effect from 16th February 1901.

CAPTAIN H. BURDEN, I.M.S., became substantive Agency Surgeon in Gilgit on the 26th October 1900.

THE undermentioned probationers for the Indian Medical Service, having completed a course of instruction at the Army Medical School and being reported qualified, have been appointed Lieutenants, their commissions being dated the 27th June 1901, the day on which they passed out of the Army Medical School—

Godfrey Eustace Charles (Bengal)
Anderson Gray McKendrick (Bengal).
Owen St. John Moses (Bengal)
John Wishart Little (Bengal)
Fred William Sumner (Punjab)
Harold Rothery Nutt (Punjab)

John Alfred Barnes (Punjab)
William Duncan Ritchie (Bengal)
Norman Emil Henry Scott (Punjab)
John Kenneth Spiot Fleming (Punjab)
Evelyn Charles Hepper (Punjab)
Charles Edward Southon (Punjab)
George Fowler (Bengal)
James Husband (Punjab)
Henry Bertram Foster (Punjab).
George Berkeley Butt (Punjab)
George Charles Lovell Karans (Punjab)
Christopher Birdwood McConaghy (Bombay)
Henry Warkwick Illius (Punjab)
Edward Wynne Brown (Punjab)
John Beresford Christian (Bombay)
Andrew Murphy (Bombay)
Frederic Troughton Thompson (Punjab)
Laurence Precival Brassey (Madras)
Colin Forbes Mann (Madras)
Satis Bose (Madras)
Patrick Laurence O'Neill (Madras)

LIEUTENANT COLONEL L. A. WADDELL, I.M.S., J.I.D., is appointed to have charge of the civil duties of Almora in addition to his regimental duties.

CAPTAIN J. GOULD, M.D., I.M.S., is appointed to the officiating medical charge of the 7th Bengal Lancers, and Captain T. H. Delany, I.M.S., to the officiating medical charge of the 44th Gurkha Rifles.

LIEUTENANTS J. W. D. MORGAN, J. C. H. Leicester, and A. MacGillchrist, I.M.S., have passed the Lower Standard in Urdu in April 1901, and Lieutenant J. D. Graham, I.M.S., in July 1901.

DR J. L. HENDRY, Port Health Officer, Calcutta, is granted leave of absence for 15 months.

CAPTAIN C. H. BISHOP, M.D., I.M.S., Chemical Examiner, and Professor of Chemistry, Calcutta, is granted one month's privilege leave from the 17th September 1901, Assistant Surgeon Chuni Lal Bose, a Chemical Examiner, acting for Captain Bedford.

MILITARY ASSISTANT SURGEON F. J. DALY is appointed Assistant to the Civil Surgeon, 21 Pergunnahs, *vice* Dr. D. Waller.

MAJOR J. G. JORDAN, I.M.S., becomes Civil Surgeon, Rajshahy, and Superintendent, Rampore Baulia Central Jail, *vice* Lieutenant Colonel French Mullen, I.M.S., gone on furlough.

"INSTANCES having occurred in which requisitions have been unnecessarily submitted by Medical Officers, when indenting for new stock of consumable articles from the Medical Store Depot, for articles which are obtainable from the several field equipments stored in station and regimental hospitals, e.g., Morphine Hypodermic injection while morphine tablets were in hospital charge, the attention of all medical officers is invited to the instructions contained in paragraph 108, Field Service Departmental Code, Medical, and 937, Army Regulations, India, Volume VI, which do not appear to be generally known or given effect to."

A third edition of Major W. J. Buchanan's *Manual of Jail Hygiene* is now in the press. This has been called for to meet the demands for it, both in and out of India.

CAPTAIN S. A. C. DALLAS, I.M.S., a Civil Surgeon of the Central Provinces, has been granted a further extension of leave for three months on medical certificate.

MAJOR F. W. GEE, I.M.S., 5th Bengal Cavalry, is granted five months' leave.

CAPTAIN J. GOULD, I.M.S., is appointed to the medical charge of the 14th Bengal Lancers.

LIEUTENANT COLONEL E. CRETIN, I.M.S., F.R.C.S., is directed to take charge of the Base Hospital in Calcutta, No. 4 N. G. Hospital, China Force, *vice* Major N. P. Sinha, I.M.S., who returns to civil employ, Bengal.

THE retirement of Major G. H. Fink, I.M.S., is now dated from the 13th July 1901, not as previously notified.

CAPTAIN C R STEVENS, I M S, M D, F R O S, will shortly go on furlough from Bhagalpur

THE death, aged 60, of Brigade Surgeon A. Hojel, of the Bombay Medical Service (retired), is announced. Dr Hojel was the leading physician in Bombay for many years.

A CORRESPONDENT has shown us some numbers of the University of Durham College of Medicine Gazette (June and July 1901). In them there is an article by a Mr A H Procter which is interesting reading. Mr Procter gives his experiences of the South African War Hospitals. In his first article he is so severe on what he calls the "Regimental Surgeon" that one is surprised to find him later in raptures of praise over the management of the hospitals to which he was transferred. He relates his first experiences with three Regimental Surgeons, and from these three draws the rather vigorous conclusion that they were "fairly typical examples." "They don't care and they won't bother" is his dictum upon them. His first two interviews contain little of interest, Mr Procter had fainted, and he was sent to the ambulance waggon. In the next instance he complained of "rheumatism," and naturally enough the surgeon was not very ready to believe in its existence, but when convinced sent him to hospital, after which Mr Procter seems to have had not a bad time playing cards and spinning yarns in spite of the rheumatic joints. It is on these grounds that he makes his attack, and writes that "much of the hospital scandal (*sic*) is due to the indifference and callousness of the Regimental Surgeon."

Mr Procter is or was presumably a medical student, and so should know that the complaint of rheumatism is the most common among malingerers, and the Regimental Surgeon on the march knows too well that it is a favourite excuse for getting a lift in a waggon. One would have expected that his subsequent good treatment would have obliterated the memory of his earlier experiences, but he evidently learnt the army lesson of grumbling.

OWING to Colonel J Young, I M S, having got an extension of service and having become P M O, Presidency District, Calcutta, Lieutenant-Colonel J Duke, I M S, reverts to his old post as Residency Surgeon, Kashmir, and Major W R Edwards, I M S, C M G, returns to Quetta.

LIEUTENANT COLONEL D FRENCH MULLEN, I M S, the Chief Medical Officer in Rajputana, becomes an Agency Surgeon of the first class.

THE appointment of Residency Surgeon, Indore, which was formerly a localised appointment of the first class, has been delocalised.

MAJOR D PRAIN, I M S, was granted combined leave from the 20th June for 1 month 25 days (privilege) and special leave (*u p a*) for 4 months and 6 days (total 6 months). Captain A T Gage, I M S, the Curator of the Herbarium, acts as Superintendent of the Royal Botanic Garden, and Professor of Botany, Calcutta.

LIEUTENANT COLONEL S T AVETOOM, I M S, retires from the service on the 1st October, and Lieutenant-Colonel F D Caesar Hawkins, I M S, retires from the 28th October 1901.

THE retirement of Lieutenant-Colonel C Adams, I M S, is now dated from the 8th July 1901.

LIEUTENANT COLONELS AVETOOM and Hawkins have retired just after 20 years' service.

THE following is a list of the candidates for His Majesty's Indian Medical Service who were successful at the Competitive Examination held in London on August 9th and following day —

	Marks		Marks
A E J Lister	3,246	R J Bradley	2,633
T F B Williams	3,135	E A. Loch	2,593
S H L Abbott	3,077	R M Carter	2,550
A W Greig	3,015	R L Hagger	2,545
R E Lloyd	3,013	D G R S Baker	2,500
J Woods	2,965	T W Harley	2,472
H B Steen	2,940	J W McCoy	2,308
D Munro	2,929	R A Willcocks	2,264
E Bisset	2,910	T G F Paterson	2,220
J E Clements	2,890	D G Rai	2,207
A W Overbeck Wright	2,665		

As was anticipated no candidates appeared for the R A M O. Comment is needless.

SURGEON GENERAL W TAYLOR, O B A M S, has been made an Honorary Physician to the King, *vice* D I G Domenichetti, deceased.

IT is probably a mistake to take too seriously all the statements of men who write to the service columns of the *B M J*, e.g., one R A M C officer of a particularly military mind states (August 24th) that no self-respecting man will enter the R A M C till (God save the mark) (1) the R A M O have the red facings of a Royal Corps, (2) and the D G is made a Lieutenant General or Major General at least!

How on earth can "red facings" improve the prospects of the corps? No wonder combatant officers gibe.

THERAPEUTIC PREPARATIONS, &c

WE have received a series of photographs of the *Traxo-Phyton Truss*, introduced by Lieutenant-Colonel James D Day, R A M C (*retd*). The photographs show this new leather truss being worn by men during gymnastic exercises. Thirty ruptured men wore these trusses during gymnastics and were examined by twenty medical officers, and it was agreed that the truss acted splendidly. In some cases it is claimed that the truss may have even a curative effect, in two cases in which it has been worn the hernia has not again come down. The pamphlet gives a large number of testimonials from medical officers on service in South Africa, where the truss has been largely used during the campaign. This new truss "simply encases the hernia and dispenses with springs sticking into the sides and pressure on the back which impedes kneeling, jumping, riding and even walking. It is comfortable to wear."

We understand that Surgeon General R. Harvey is arranging for a supply of these trusses to the Medical Store Depôts in India.

MESSRS BURROUGHS AND WELLCOME have sent us specimens of *Cacodylate of Soda*, both for internal use and for use hypodermically, the latter method being that recommended in a recent number of the *Polyclinic*. No better means of exhibiting this drug exists than these tabloids.

Notice

SCIENTIFIC Articles and Notes of Interest to the Profession in India are solicited. Contributors of Original Articles will receive 25 Reprints gratis, if requested.

Communications on Editorial Matters, Articles, Letters and Books for Review should be addressed to THE EDITOR *The Indian Medical Gazette*, c/o Messrs Thacker, Spink & Co., Calcutta.

Communications for the Publishers relating to Subscriptions, Advertisements and Reprints should be addressed to THE PUBLISHERS, Messrs Thacker, Spink & Co., Calcutta.

Annual Subscriptions to the *Indian Medical Gazette* Rs 12 including postage.

BOOKS, REPORTS, &c, RECEIVED

Invalid Recipes By E E Mann (Longmans, Green & Co) 6d
The Report of Pahang, Malay Peninsula.
N W P & O Agricultural Reports.
The Burma Hospitals Report.
The N W P Sanitary Commissioner's Report.
The Bombay Medical and Physical Society's Transactions.
Diseases of Stomach and Surgical Treatment By Mayo Robson and B G A. Moynihan (Ballière, Tindall & Cox, London, 1901) 2s 6d.
Price 15s.
Agricultural Lodgers.

COMMUNICATIONS RECEIVED FROM —

Lieut.-Col. J D Day R A M C, London. Capt. S P James, I M S, Jalpaiguri. Capt. L Rogers, I M S, Calcutta. Major E Roberts, I M S, Simla. Major Drake Brockman, I M S, Bharatpur. Lieut.-Col. A M Davies, R A M C, London. Dr E H Bingley, B N Rv. Capt. S Anderson, I M S, Japan. Capt. W Glen Linton, I M S, Bombay. Major Maynard, I M S, Patna. Col. A. Scott Reid, I M S, Nagpur. Capt. J Jackson, I M S, Yerreda. Capt. J Murray, I M S, Mian Mir. Lieut.-Col. L A Waddell, C I E, I M S, Almorat. Col. K. McLeod, I M S, Netley. Major A E Grant, I M S, Madras. Capt. O Duer, I M S, Burma. Dr J Gimlette, Pahang. Dr T Clarke, Malay Peninsula. Dr U N Brama Chari, Dacca. Dr Chatterjee, Calcutta. Mr Brundell Carter, London. Lieut. Holdich Leicester, I M S, Newgong.

Original Articles.

SUGGESTIONS FOR OFFICERS IN CHARGE OF FIELD HOSPITALS

By T H FOULKES,

CAPTAIN, I.M.S.,

AND

D BROWNING,

CAPTAIN, R.A.M.C.

The following notes will, it is hoped, be found useful by young medical officers when ordered on Field Service

I—Mobilization

On being warned for Field Service, a medical officer should at once arrange for his last pay certificate, to be obtainable when he receives orders to join his Field Hospital

The order warning him must be carefully kept, as horse allowance can be drawn from the time of its receipt, provided he can certify that a horse was kept during that period (A.R.I., Vol I, page 1, 443r). He should then carefully "re-read" his Field Service Department Code, and also renew his acquaintance with the Field Service Equipment Tables, which latter can usually be borrowed from the District P.M.O., or will be found in No 11 box on arrival at his hospital

This study will be found to save much time when checking the equipment

He ought to overhaul his personal kit, about which a few remarks will be made later

On arrival at the place of mobilisation, he must, of course, report himself personally to the S.M.O. of the station, and by letter or wire to the P.M.O. of the district, if the station is not a district head-quarters. He should then get to work as soon as possible and communicate with the heads of the departments from which the hospital is to be obtained. These are shown in para 146, Field Service Departmental Code

It is important to let the Post and Telegraph offices know of his arrival at once. He probably will find a pile of correspondence awaiting him. It is necessary to obtain from the P.M.O. or S.M.O. of the station and from the C.C.O. a copy of any orders which may have been issued concerning the hospital

It is most important to start the hospital diary the first day and enter everything referring to the hospital fully and clearly. This cannot be done too carefully. The diary should be so kept that in case of a change of medical officers, the officer who takes over charge may be in a position to answer any questions that may arise after the campaign is over

To start with, a nominal roll of the *personnel* should be entered in tabular form, showing stations from which

they will come, the date of arrival, the date up to which they have been paid and what advances, if any, have been taken. Also the number and date of the order posting them, and a list of their documents. This table can be filled in as the *personnel* arrive, mistakes and deficiencies will be noticed and can be attended to at once. It only takes a short time to write, and it will be found more convenient to look up references in a table like this, than to look up the original documents

As the *personnel* arrive they should each be medically examined (para 150, F.S.D.C.) and then told off to their respective sections, and instructed in their duties. It will be found useful to put the hospital assistants on to learn the contents of the various packages, and to examine them in this

The following is a list of documents required —

- 1 Medical officers—
Last pay certificate duly countersigned,
Extract of orders posting the officer,
Medical certificate of fitness for Active Service
- 2 Assistant Surgeons and Hospital Assistants—
Last pay certificate,
Extract of orders,
Medical certificate of fitness,
Confidential report and transfer return
- 3 Regimental N.C.O.'s and men—
Last pay certificate,
Extract of orders,
Medical certificate of fitness,
Company defaulter sheet,
Medical history sheet
- 4 Army Hospital Corps—
Last pay certificate,
Extract of orders,
Last clothing certificate,
Defaulter sheet,
List of necessaries in possession

It should be noted whether Medical subordinates have their pocket cases, revolvers and ammunition. Some C.O.'s send receipt and delivery vouchers for the arms and accoutrements of the Havildars and Ward orderlies. These arms should be inspected occasionally to see that they are being kept clean

Equipment—The following stores comprise the equipment of a mobilised field hospital

Medical boxes, which are stored either in a medical store depôt, or, more often, in the station or regimental hospitals

Commissariat boxes and packages kept in the Commissariat godown

Furniture, in the R.E. Barrack Master's possession

Tents and Ordnance stores, which are to be got from the arsenal if there is one; if not, from the C.C.O. station

Detail of tents is given in adjoining table

Petty supplies (App 3, Chapter XVI, Field Service Departmental Code), purchased by the C.C.O. on requisition by the medical officer in charge. These should always be obtained during mobilisation. If they are overlooked there may be difficulty in getting them later

Water gear, issued by the C.C.O. and consists of a pair of pakhsals, a chursah and a dhool for each pakhsali mule, and a new mussuck for each bhusti

Clothing is done by the C.C.O. The scales of clothing are laid down in Field Service Manual, para 340,* but are generally modified for the particular campaign on which the troops are ordered

Log lines, fifteen feet for each man, are issued by the C.C.O. for tying up bundles

First field dressings—These are obtained from the Medical Store-keeper for the personal use of the medical officers, subordinates and fighting men. They are not issued to followers

Dooly transport is obtained from the universal provider, the C.C.O. If receipts are given for doolies complete, the following articles constitute the "complete" —

* Table IV, Field Service Equipment Tables

	Bags, Pole	Bags, Peg	Poles, Ridge	Poles, Standing	Ropes, with Toggles	Saluta	Cups, Pole	Discs	Hammers	Pins, iron, large	Pins, iron, small	Pins, iron, with discs	Pins, iron, without discs	Pins, wood large	Pins, wood, medium	Pins, wood, small	Ropes, guy	Mallet, large	Mallet, G S	Mallet, small	Hammers, F H Tent	Wall, Bags	Bags, pin, B P Tent
Tents, 160 lb G S	2		2	3	1	1									34								
Tents, 80 lb	1	1	1	2	1	1										20	3		1				
Tents, Field Hos pital		1	1	2		1						6	30								1		
Sowar pattern, 45 lb		1		1		1	1	1	1	14	14												
I P, 40 lb			1	2		1									20					1			
I P Necessary														18			1					1	
Walls right														13		4		1				1	1

Flags, D I P Poles II, 9 ft. with 3 iron wire guys and 3 pins, iron, 9 inches

1 small wrench

10 small pegs

2 wire guy ropes These three items are contained in a canvas bag and are for use when the dooly is fixed up as a *tente d'abri*

2 canvas slings for holding the sick man's rifle

1 small net

2 chagals

When all of the above things have been obtained, the actual work begins. Everything must be checked carefully and noted to be in working order. There is no short way of doing this, but if, as previously advised, the Field Service Department Code and the Equipment Tables have been well learnt, there will be a great saving of time in references. The Field Service Department Code contains two lists of the equipment of a field hospital.

Appendix 3 gives the list of articles and, opposite each, the number of the package in which it is contained.

Appendix 6 gives the list of contents of each individual package. The first appendix is used to find out in which package an article should be, the second, to discover what deficiencies there may be in any particular package.

There are a few suggestions which will be found useful and "time saving" in checking a field hospital equipment,—a pot of paint and a few brushes are necessary—blacking will serve.

When the haversacks and companions in Nos 3 and 4 boxes are checked, a small number should be painted on each. If any of them have articles missing or requiring to be replaced, the one which was deficient can be found at once. This saves opening them all again, which would otherwise be necessary, as they are all alike outside. Further, when these haversacks and companions are distributed to medical subordinates and N C O's or ward orderlies (Field Service Department Code, para 62), the number of the package issued to each man can be noted and he be made responsible for losses.

Great care is necessary in unpacking Nos 6 and 7 boxes, as they are packed somewhat tightly, and when they are packed up again after examination, the splints are very liable to get broken when the lid is shut. The best plan is to lay the articles out in order as they are unpacked, and then to pack them up in the same order in which they were taken out. Note carefully how the different tents are packed by the ordnance and tie them up in the same way. It is a good thing to paint the description of the tent on each bundle of poles, as they are often all packed in the same kind of bundle, and if a particular kind of tent is wanted, it is hard to find the right poles unless some mark is made on the bundle. You may open ten bundles before coming to the one you want if this is not done.

While on the subject of equipment the following rules will be found useful —

First—After obtaining everything in the way of stores and equipment that is authorized, paint on all that is not already marked, the designation and number of the hospital. This will include lanterns, buckets, etc., but more important perhaps than anything else the clothing and blankets of the followers. One constantly has cases of alleged thefts of kit to inquire into, and the evidence is always very conflicting. This cannot happen if the kit is all marked with the owner's numbers. It can easily be done by the ward orderlies who have little or nothing to do during mobilisation. The waterproof sheet in which each follower's kit is wrapped up on the march should also have the hospital designation marked on it, so that it will be recognisable on the line of march and in camp.

Second—Start an issue book from the first day, and enter in it the name of any person to whom articles may be issued, and the date of their being returned. This should be verified by a medical officer's initials and will save much heartburning later on when lost articles have to be paid for. For example, the tent lanterns and buckets are issued to the senior man in each tent, who is responsible then for their loss or damage. The cooking pots are issued to the head cook and the *musicals* to the blinists.

At the monthly checking of the hospital equipment, the responsible persons should produce the articles which have been entrusted to them.

Third—This, although most important appears to be often neglected. Never send any articles of equipment out of the hospital without a temporary receipt, as even the best intentioned people sometimes forget to return things borrowed by them.

Personnel—As the *personnel* arrive, attention should be paid to what has been said above about their documents, &c. As a rule there will be no trouble with the medical subordinates and fighting men. The followers, however, are different.

Enquiries should be made regarding the sweepers and the carpenter. Mistakes have occasionally been known to occur with sweepers and, after starting on the campaign, it has been discovered that they would not do all the work required on account of caste objections.

A good carpenter is most useful in a field hospital, therefore always reject at once a man who was a *ghari wala* or a shoemaker before joining. Even this has happened.

The dooly bearers require a certain amount of training according as to whether they have been on active service before or not. They must first be taught the number of their field hospital and made to repeat it until they can bring it out automatically when questioned. This will always be found necessary. They should then be told off into sections. They must

be taught their sections in the same way as above stated for the hospital, and it is better to call the sections 1, 2, 3, and 4, or the equivalent in Hindustani, as the dooly bearer's intelligence is not usually capable of grasping the subtleties of B, C, and D.

During the few days occupied in mobilizing, they should be handed over to the N C O's and taught the elements of drill. They must be able to fall in by sections, to form fours and to march in the latter formation. This is all that is required, but it is wonderful what a change on the side of order it makes. For instance, when men are sent on fatigues, it prevents straggling, which is an instinct with the dooly bearer, it prevents his deserting or sneaking off into the bazaar and getting drunk on his three months' advance of pay, and it prevents the loss of the packages which are being moved. A medical officer who has his men taught this amount of drill will find that he can move his camp in half the time that he otherwise could have done.

Next, the doolies of each section should have consecutive numbers marked on their poles and then the dooly bearers of each section should be told off into dooly crews. One crew of these will in future belong to each dooly. The reason for this will be found on the first march, if the arrangement has not been made. When carrying loaded doolies, four men carry, while the remaining two walk alongside as reliefs. If there are many doolies loaded it is impossible to supervise all of them, for, by the time the column has marched five miles the doolies will be straggling all along the line on account of the different weights of the loads and the different powers of the dooly bearers. The medical officers can do no more than ride up and down the line exhorting the bearers. It will usually be found after a time that each dooly has still its four bearers who started carrying, but that the other two have disappeared. It is then very hard to bring the deserters to justice, as each man who is questioned will give the name of his own particular enemy as missing. If, however, each dooly has its own crew and the doolies are numbered, a reference to the list will show the missing men, and they can be dealt with in such a way as to make them prefer the labor of dooly bearing in future to the trouble they may meet at the end of the march.

Lastly, another subdivision must be made, and this before leaving the station of mobilisation. The men should be arranged in messes, each mess having its own set of cooking pots, otherwise each man brings his own sets of cooking pots, and carries them on his head or in the empty doolies, or else he secretes them in his kit after the latter has been weighed for transport. All these are obviously objectionable. The follower is only allowed 10 lbs transport, and his kit will weigh that without his cooking pots, so he has to carry them himself.

The messing arrangement can be made by the sirdars and mates according to caste. It would be convenient if the dooly crews and messes could be made to correspond, though this can not always be done. The surplus cooking pots are then left at the men's own homes.

II—On the March

There are a few observations which will be useful to bear in mind regarding marching with a Field Hospital.

First, all loads that are not required in camp should be tied up in their slings overnight and arranged on the ground in pairs, so that mules may be marched up between them. In this way no time will be lost in loading. Experience will show how soon, before the hour of marching, the tents should be struck. The time required for this and for loading will, of course, decrease as the men become accustomed to the work. As soon as the tents have been struck and tied up, the loads should be arranged as above, in pairs, so that loading may be done as simultaneously as possible. Loaded mules must never be kept standing, they should

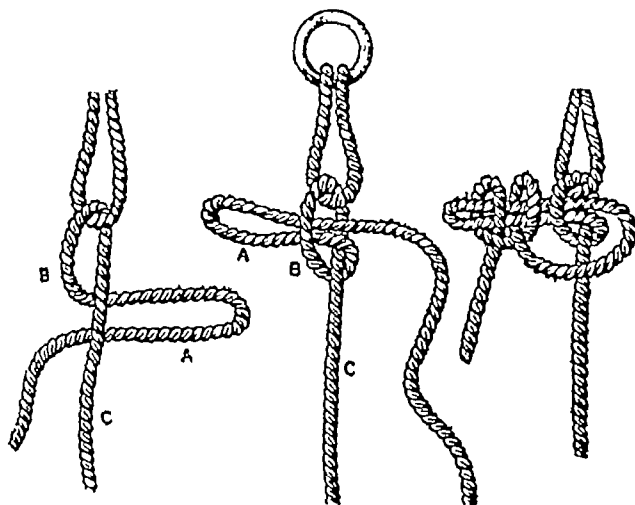
be marched to and fro until the column is ready to move off. Advantage should be taken of this, and of any other delays throughout the march, for medical officers to go down the line and inspect all the loads. If, on the march, a load comes loose or falls off, the mule must be taken off the path to reload and not allowed to block the way, the driver must be then instructed to cut in where he can, and not to try and trot the mule up to its original place. It may be borne in mind that it is the duty of the baggage guard to assist in replacing fallen or loose loads. (776, Part I, Field Service Manual.)

On arrival in camp, the baggage should be halted to one side of the camping ground so as not to defile the camp. All available followers should now be fallen in and told off, four to each mule, and unloading should be done simultaneously. If this be not done methodically there will be chaos, and much unnecessary delay. Dooly bearers are apt to underrate their powers, and will crowd around the lightest loads. Two men are sufficient to lift off any hospital load, as it only weighs about a maund.

Both in unloading and loading, the men should be taught to work together. When loading, the four men should swing up the two loads as far as possible in one motion, and none of them should leave go until all of the rings are adjusted in the saddle hooks. A very sidgoly mule can be kept quiet by holding up his fore leg.

Before starting on a march, everything should be packed and tied up before commencing to load. At first it will always be necessary to inspect the saddlery and see that it is properly fastened. Mules should be so tightly girthed as to prevent the loads from rolling, or girth galls will ensue. On the other hand they should not be pulled tightly enough to wrinkle the skin or to bruise the animal. (Girths are kept soft by hand rubbing.) Loads should ride high and not touch any part of the animal, and, as far as possible, only flat surfaces should rest against the saddle. They must be equal in weight, if not equal, the lighter load must be made to balance by the addition of stones. Small articles such as lamps and buckets should be tied on the top of loads and not allowed to hang loose. One medical officer ought always to see all transport out of the camp.

With each mule there is supplied a pair of rope slings for tying up loads. These are fastened as follows. The two ropes are laid on the ground side by side, at a distance apart corresponding to that of the pack saddle hooks. The load is now placed on them and the free



ends of the rope are brought over and passed through the leather covered loops. A loop of the free end is then tucked under the standing rope. This is the so-called "transport loop" (fig 1). A is the loop tucked under C, the standing rope. The portion of the rope between the transport loop and the leather covered part (B, fig 1) is pulled tight, and then the transport loop

is tucked in under B, fig I, and caught. A couple of half hitches are now made with the free end of the rope over the transport loop, and the remaining slack of the two slings is then crossed over the top of the load and the ends are tied together with a reef knot. The accompanying diagram will make this description more clear. It will be borne in mind that the iron ring of the sling is only intended for hanging the load on the pack saddle hooks. The sling, tied in this way, can be easily undone, by untying the half hitches and pulling out the loop. In the case of hospital boxes slings are tied in such a way that the rings lie about half way up the hinge side of the box. With soft loads, such as tents, the rings must lie about the centre of the flattest side. This will enable the load to sit well and high on the saddle.

There are five kinds of tents supplied to a field hospital. These are packed in the following manner for mule transport—

First, 80lbs double fly tents (F S Department Code, para 140)—The tent is spread flat on the ground, outer fly under the inner. It is then pulled tight from the corners to make it lie quite flat, with no creases. The right half is now folded over on to the left, so that the doors correspond, and the corners are again pulled tight. The triangular doors are folded in so that the tent now lies square. The ropes are all turned up inside and the tent is folded by *lapping* over a third of it from one side, the remaining third being then lapped over this. The pegs and guy ropes are then put on the tent and it is finally folded by lapping up twice from one end. It is now laid on the salita, which is tightly laced, and the slings are put on as above described.

80 lbs single fly—This is packed in the same way as the double fly tent, except that after the pegs and guy ropes have been placed on the tent, it is rolled up instead of being lapped, then placed in its salita, which is an open sack. The poles are now placed on the tent and the salita is laced tight over the poles.

40lbs tent, same as above.

160 lbs tent—This tent makes one complete mule load. It is folded in the same manner as the other tents until the longitudinal laps have been made. It is then placed on its flat salita and the cords are loosely laced over it from either end towards the centre where the ends must be left free. The poles and pegs of the tent are now divided as far as possible into two equal bundles, one of these is placed on each end of the tent, which is now rolled up over the bundles. The two ends of the tent are rolled up simultaneously towards the centre till there is a space of only $1\frac{1}{2}$ feet between them. The salita cords which were left free are now wound tightly round and round the part of the tent occupying this space making it as narrow as possible. The slings are then adjusted on the rolled up parts which now make two half loads. The ropes of the slings are crossed on each side before being passed through the leather covered loops, and, after the transport loop with its hitches, has been made, the slack is wound round the projecting poles at each end before being finally tied on the top.

When laying out a camp remember that the space occupied by each kind of tent is given in Appendix 15, sec V, Field Service Departmental Code.

III—Personal

It is a good thing to take as much kit as possible up to the base, where it can generally be stored, if necessary, until required. As a rule, one does not know until the base is reached whether the hospital is to form part of a moving column or to be stationary on the lines of communications. In the latter case books and extra clothes, which could not be carried with a Brigade, make a good deal of difference to one's

comfort. Time is apt to pass very slowly on such occasions. The morning convoy may or may not bring a lot of work, the rest of the day has to be got through somehow. A gun or fishing tackle will then help one out. Therefore the likelihood of being stationary at some period of the operations should always be thought of when packing up before leaving one's station to join a field force. If the hospital is to advance with a brigade, the scale of transport is published in orders and the amount of kit that can be carried will be that given in Table (I) of Field Service Equipment Tables, which model kit can be more or less adhered to.

The shortest experience of active service will impress on one's mind the soundness of the following advice.

Never start a march without a meal. Carry another in your haversack, as well as a feed for your horse on the saddle. You can never be certain that your baggage will arrive, or that you will arrive in your next camp the same day.

Never obstruct officially, everyone is working at high pressure, especially at the beginning of a campaign.

Never grumble. Everybody has enough discomfort and worry of his own without the addition of other peoples'.

Never believe camp rumour. This will save unnecessary elation or depression of spirits.

THE NEW THERAPEUTICS RATIONAL THERAPEUTICS v EMPIRICISM AND QUACKERY

By P W O'GORMAN, M.D., M.R.O.P., D.P.H.,

MAJOR, I.M.S.

I CRAVE permission to introduce to the profession in India a new method in the treatment of disease. And yet not new, except in contrast with the antique, although unknown and unpractised and, I hope to prove, strangely neglected by British Physicians. The claim for it, which should immediately engage the serious attention of all physicians, is that "it is an up-to-date method for the treatment of disease, whereby departures from physiologic equilibrium can be controlled *more quickly, safely, and pleasantly than by any other known method*".

"Rational therapeutics," as Sir T. Lauder Brunton says, "is the highest branch of medicine. Its advance is necessarily slow, because it is based upon pathology on the one hand and pharmacology on the other, and both of these rest upon physiology, which in its turn rests upon physics and chemistry." And as chemistry is only a hundred years old, our advances have been many and rapid. But while we acknowledge this, we must recognise that our pharmacopœias are very slow and very conservative to make immediate practical use of this acquired learning, and so do not reflect the highest or latest advances. It is the aim of this new method that I am advocating to press forward the claims of ad-

vanced pharmaceutical and pharmacological knowledge to therapeutical application in every day practice. To reduce them from the regions of theory and the abstract to the practical and the concrete—to make us realise them as actualities for immediate use.

It was in the year 1818 that Professor Adolph Burggrave, of the University of Ghent, in Belgium, first promulgated his principles of accurate therapeutics by means of the active principles of drugs to the exclusion of doubtful or antagonistic compounds, organic and inorganic, and he still continues to edit a journal devoted to its doctrine—*Bulletin de médecine et de Pharmacologie Dosimétriques Burggraviennes*. Burggrave's teaching resulted in the organisation of a new school of medical practice, which was taken up by many physicians in France, Spain, Portugal and other countries. Because the medicines were "mathematically measured" in small doses for convenient dispensing and accurate dosage, the name "*Dosimetry*" or "*Dosimetric medicine*" was applied to distinguish this method of prescribing from others then in vogue.

Ten years ago, it was taken up by two able and energetic American physicians, Dr Wallace C Abbott and Professor W F Waugh (Harvey Medical College) of Chicago, in the United States, where, aided by many disciples, under the reformed title of *ALKALOIDAL THERAPEUTICS* or *ALKALOPHTRY*, its principles, on a more liberal basis, have been reduced to flourishing practice among an ever increasing circle of ardent adherents. Its organ, *The Alkaloidal Clinic*, a remarkably interesting monthly journal (annual subscription \$2, or Rs 6 As 4, post free to India) worked on a peculiarly novel, "bracy," helpful method, claims in influential reading medical public of 30,000—about 9,000 more than the *B M J*. In order to demonstrate the easy practicability, and to ensure the success of the methods advocated, by the supply of the special drugs in guaranteed purity or concentration, "the Abbott Alkaloidal Co." was established, and continues to maintain its high reputation.

What then, in short, are the fundamental principles which underlie Alkaloidal medication or modern accuracy in therapeutics?

Firstly—The abolition of *crude drugs*, inorganic and organic, whether in powder, extract, or solution and of course of their admixtures.

Secondly—Their substitution by their individual or separate *active principles*, the characteristic agonists. Whatever they be, which pharmacology or pharmacodynamics teach us give rise to specific effects on the system.

Thirdly—The preferential employment of *concentrations* or of the more powerful salts and useful chemical combinations, animal, vegetable and mineral, where the active principles are not yet discovered or available or do not otherwise exist, but which experiment or clinical experience has proved specially advantageous.

Thus, besides the *Alkaloids proper* (Aconitine, Atropine, Caffeine, Cocaine, Codeine, Emetine, Strychnine, and Veratrine,) all ending in *ine* (B P), or *salts of alkaloids* (Quinine sulphate, Morphine, Hydrochloride, Hyoscyne, Hydrobromide, Pilocarpine Nitrate, Apomorphine Hydrochloride), there are such active remedies as *neutral principles* (Alum, Elaterin, Colocynthin), *Glycosides* (Arbutin, Salicin, Strophanthin, Digitalin, &c.), *Resins* (Podophyllin, Podophyllotoxin, Cannabin, Koussein), *Enzymes* (Pepsin, Papayotin, Pancreatin), *Animal Glandular Extracts* (Thyroidin, Adrenin), *Blood Sera* (Anti diphtheritic, anti tetanic, antivenereal), and *medicated sera* (Arseniated Serum, &c.) and *concentrations and extracts* (Alum, Rhein, Gossypin, Hamamelin, and Lobelin). There are besides *acids*, *salts of various metals* and other *chemical combinations*, as Glonoin, Anemonin, Camphor Mono bromate, Iodoform, Chloral, Chloroform, &c., *synthetic and coal tar products*, as Phenacetine, Salol, Resorcin, &c.

In short, the employment only, as far as possible, of "arms of precision"—chemically pure, definite remedies

yielding exact and positive effects of which we can make sure, instead of relying on a medley of "unknown quantities," of doubtful potency and uncertain action, very possibly mutually antagonistic. In other words alkaloidal or "active principle therapy" (which is a truer and more comprehensive name) aims at the upraising of the practice of medicine from empiricism, quackery, and superstition to the dignity of a precise science. It encourages the study of single remedies of definite action, and thereby advances the knowledge of pathological conditions and compels correct diagnosis.

Let us examine the *PHARMACOPŒIAL DRUG QUESTION* in detail. As regards the *Mineral Kingdom* there is not quite so much to be said. The Pharmacopœia directs, it is true, that our mineral drugs be pure and our great English houses are very careful, yet, as a matter of every day fact, particularly in India, are all our acids, and the metallous, metallic alkaline salts obtained in usual commerce *chemically pure*?

What guarantee has the ordinary practitioner that his drugs are absolutely pure, as he does not get them direct from the manufacturers under a certificate, nor does his so called "Chemist and Druggist," much less his brayar druggist, test each one of his supplies, and in these days of competition and cheap quotations the expression "fit for medicinal purposes" may acquire an undesirably wide meaning? Such a thing as a systematic inspection of drugs or prosecution for impurities is practically unknown in this country, even in the large municipal cities. Moreover, the Indian practitioner, tutored and encouraged to substitute "local or indigenous produce" for European stores, and conservatively enamoured of *Indic* or *Unani* medicine, indulges in a strange medley of mixtures impossible of definite results, while the amusing part of it is that he all the time flatters himself he is practising modern medicine. I need only mention Orpiment or Realgor (*Hartal*) a compound arsenical ore of varying strength intermingled with sulphides of the metals, or Sulphide of Antimony—(*Surma*)—containing Sulphides of arsenic, lead, copper or tin, and Perchloride of mercury (*Kur Kapoor*) an impure, irritant salt, and so on.

But it is when we come to the *vegetable materia medica*, whence we obtain our most important and valued drugs, that we at once see the hopelessness of the Pharmacopœial preparations, and recognise the necessity for alteration. Here we arrive, like another Alice in Wonderland, in a region of confounding complexity—where even simple looking things, on examination, prove very multiple indeed. To the distracted physician taught to rely on certain drugs as productive of only positive specific results, the failure time after time on his patients, in what appeared to be plain sailing cases,—nay, the surprising untoward, antagonistic or contradictory effects that present themselves, apparently in the guise of new "complications" in the disease,—not only serve to perplex and alarm him, but eventually disgust him so that the time soon comes when he "loses faith in medicine," and perhaps heartily regrets the day he ever became a doctor. As for his patients, if they survive they also lose faith, not in medicine at first but in *their doctors*, and so we find them ready for the sickle of the blatant quack.

Let us take one simple looking common drug—*Opium*. We are taught to regard this as a typical, almost simple narcotic. And almost the only active principle we commonly consider in it, when we think of it at all, is morphine, to which we attribute its action. And yet this single, most commonly used, drug has a composition the most complex in the *materia medica*. It has at least nineteen alkaloids, some possessing just the *contrary* effects to others.

The Alkaloidist does away with all this doubt and uncertainty, he removes the dirt (which, we know, is "matter out of place"), the obstruction and the antagonism, he resolves the mysterious compound into

its active principles, and selects only just what he wants, for, having definite and positive aims, he seeks remedies having only definite and positive results. He, in fact, is the only scientific physician.

I might thus easily "run a coach and four" through the entire materia medica, but must reserve my illustrations for a future occasion. Of the scores of authorised animal and vegetable drugs, the Pharmacopœia ventures to "standardise" the preparations of only six—and this standardisation is open to more or less objection, especially as regards taking the two or more "total alkaloids" present *en masse* as representing "the" active principle, whereas it is possible they may differ enough in properties to render it desirable to either entirely reject or to use each one separately for its own proper and legitimate effects. I need only instance Nux Vomica and Cinchona.

But there are many very valuable and frequently used drugs not attempted to be standardised. The strengths in active principles are left entirely to chance, so, it may happen that do what he may, the Physician at the bedside will be like that puzzled Cockney hero of Chevalier—"we dunno where 'e are."

And here I might utter a word with regard to the common galenic menstruum, alcohol. I have elsewhere* proved alcohol to be not a stimulant but a sedative, not a muscle or nerve tonic, but an all around depressant and paralysant. To employ it therefore as "the" menstruum for stimulating drugs as Digitalis or Nux Vomica is one of those things that, as Lord Dundreary says, "no fellow can understand." Oh, but some will insist, it is a stimulant and not a narcotic, then, kindly explain why you antagonise your Tincture of Opium or Hyoscyamus or Cannabis Indica with it?

The alkaloidal position, therefore, is very evidently impregnable, because it is scientific.

That alkaloid therapy may be reduced from abstract theory to concrete practice, certain practical PHARMACEUTICAL IMPROVEMENTS on older methods are introduced. For convenience in dispensing accuracy in dosage, avoidance of distaste and for elegance of appearance these preparations are generally arranged as small *granules* or minute *tablets*, plain or variously coloured for distinction.

They are accurately divided and measured to MINIMUM dosage. They profess to be easily soluble and rapid solubility is essential, are mixed with fine sugar for bulk and preservation and coated with the same without any admixture of hardening excipient such as in our common dispensary pills, and they consequently absorb moisture readily even in the damp hand, and may be administered (as to children) dissolved in water if necessary. "While the old methods ask the sick cells to do both chemistry and absorption—when the former can be at best but poorly performed—the new cell for absorption only" (Abbott). Taking advantage of the rapid absorption from the mouth certain drugs may best be sucked or held under the tongue, or they may also be given hypodermically.

THE THERAPEUTICAL APPLICATION of these depends on the ordinary principles of the practice of physic, but in alkaloidal therapy certain customs or *basal principles* have been developed, which, though not confined to this therapeutic method alone, have become, in a manner, habitual to its followers (Abbott). I will indicate some of the principal ones which dominate this practice, and as they are readily demonstrable on any case their truth can easily be tested.

It is necessary, however, to first grasp the importance of certain common PATHOLOGICAL CONDITIONS on which alkaloidal treatment is so frequently based, and on the special recognition of which so much of its professed success depends.

(1) The fundamental principle of Burggræve's theories is derived from his comprehension of the importance of the *vaso-motor nerves in acute diseases*. In the state of chill there is a spasmodic contraction of the cutaneous

capillaries in congestion, a vaso motor paresis (Gay). These have, accordingly, to be combated as they present themselves, as in pneumonia, gastritis, hepatitis, &c.

(2) Hyperæmia in one part of the system may be co-existent with anæmia in another, as in the enteritis and cerebral anæmia of enteric fever.

(3) The functions of organs may be affected by *excess* or *deficient ganglionic activity*, as the heart in angina pectoris and the bowels in certain diarrhœas. In this connection very special importance is assigned to the action of the "abdominal brain" (of Byron Robinson) or automatic visceral ganglia (Solar Plexus).

(4) The realisation of the paramount importance and commonness of *auto-toxæmia*—resorption of toxic products (ptomaines and leucomaines) from fermented or putrifying contents of the stomach and bowels particularly, and also bladder, nose, mouth, skin, uterus, vagina, urethra, &c., as well as from suppurations, as external abscesses and wounds, and pyæmic kidneys, tuberculous lungs, dysenteric intestines, and so on.

(5) The realisation of *bacterial infection*, as in erysipelas, endocarditis, diphtheria, small pox, enteric, &c.

(6) The realisation of *phagocytosis and immunity*.

(7) The recollection of the extreme delicacy of the systemic ultimate tissues—the protoplasmic cells and their differentiations, which are to be essentially impressed by our remedies, and the corollary that medicines themselves, properly administered, are powerful agents.

(8) The realisation that disease in any part of the body is an indication of a *deficiency in the vitality of the affected tissues* the necessity, therefore, of non-reactionary vitalisers or energisers, or it may be "cellfoods," and the avoidance or cautious employment of cell depressants.

(9) Another important consideration may be added. Hughlings Jackson, I believe, has shown that, as the higher developed nerve centres are laid in abeyance the lower function centres, losing the higher control, are apt to run riot and deflect action from their normal. It may be necessary, therefore, to artificially control or quieten such, until time is given (and treatment) for the former to recover their mastery.

(10) *Acute diseases*, as pneumonia, and even the *specific and eruptive fevers*, that the old style physicians have come to regard as necessarily bound to "run their course" as enteric, measles, small pox, if taken early enough may be successfully "jugulated" or "aborted."

From these factors, among others, THE METHOD OF TREATMENT resolves itself on the following lines—

I To acute diseases oppose acute treatment (Burggræve). That is, the more acute the symptoms and hence the more urgently they call for interference, the more frequent must be the repetition of the doses. "This statement is almost axiomatic, but it has been reserved for the alkalometrist to recognise it and call the attention of the profession to its importance" (Abbott). This however, does not mean full doses, as under the old method, nor rigid dosage every one or two hours, but administered far more scientifically.

II Small doses frequently repeated, until the desired effect is produced, (i.e., the therapeutic or healing effect short of too much physiologic effect—Coleman), that is, every fifteen to thirty minutes, according to the severity of the attack, until some improvement is manifest. Such doses then to be given, at greater intervals, as will keep up this effect (Abbott).

This of course in acute cases. In alkalometry the remedy is chosen that most nearly antagonises the disease-condition present, and is given in small but effective doses until the drug effect has been raised to the point where it exactly counteracts the disease effect,—a reaction to the normal is the result (Abbott). "The principle of administering a remedy until the desired effect has been secured," says Dr. Abbott, "simple as it appears, was never satisfactorily applied, or even understood, until the present method was advocated by Burggræve. This principle is of especial importance in

* The Scientific Valuation of Alcohol in Health. Sold by Messrs Thacker, Spink & Co., Calcutta.

the treatment of children, to whom the giving of narcotics, narcotics, or antispasmodics is often a necessary but dangerous measure. No drug, however powerful, need be excluded from child practice when employed alkalometrically, as everything depends upon the accuracy of meeting the indication, and upon the gradation of the dose, all danger is removed by cumulative minimal doses."

III The "mutuer morbi" is never to be lost sight of and every endeavour is to be made to eliminate and to neutralise it. This is called the "dominant treatment," and if the cause be unknown, treatment must be directed against the most prominent symptom. Treatment, again, may be limited to urgent or concomitant symptoms, and is known as "variant treatment," but it must be discontinued as soon as relief is obtained, while the dominant treatment is continued as long as the disease lasts.

IV It is desirable to popularise medication by single select remedies as far as possible, with a view to definite objects, and hence encourage and aid the study of disease symptoms and diagnosis as well as of the actions of medicines. As Dr Finley Ellingwood says, "it leads to exactness in its results we are after, and exact results we must have."

V Another of Burgrave's statements which is of great importance, if true, and we can all test the truth of it for ourselves, is that the alkaloids when given in the alkalometric manner never antagonise each other. So, if a complicated case requires two remedies having distinct and opposite effects, we may give them both together or alternately and get the benefit of each (Gay). That is to say, that the tissues have a selective action on certain drugs, dependent on their pathological condition or physiological needs, and that this may best be taken advantage of when the drugs reach them in a stream of rapid and continuous absorption under small and frequent dosage.

VI It is necessary to recollect the dual action of certain drugs, the primary and the secondary effects for example with such drugs as exemplify "the law of dissolution" as morphine, chloroform and alcohol, the functions are at first stimulated and later on paralysed. But these depend much on the dosage—small doses excite, large depress, and on continuous or intermittent administration. Ipecac. in large doses excites vomiting, in small doses suppress it. Quinine in small doses cure fever, in large excite it. It was ignorance of this fact that led Hahnemann to postulate the erroneous theories on which he founded Homoeopathy.

VII Overcome deficiency in the vitality of affected tissues by the powerful influence of "the general vital nutrient arsenic" (Gay), or by strychnine, "the revivifier of every function of organic life" (Abbott), or by nuclein "the cell food" and "wonderful", "active principle of life" (Aulde), or of such vitalisers of particular tissues as sanguinaria for the respiratory tract, cantharidin for the bladder, phosphorus for the nerve tissues (Gay), digitalin for the heart, and so on. Restore cell function by promoting cellular activity and by increasing resistance through the knowledge of the principles underlying leucocytosis, &c. Do not so absolutely rely, except as temporary expedients and as a means to an end, on remedies calculated to suspend nerve irritability, and hence suppress or retard the activity of cell function, since most of them prevent elimination of waste products and thus promote self infection and tend in the direction of "reversion" (Aulde). Moreover we are too apt to forget that sedation (narcosis is but a degree higher) obscures the symptoms of the disease on which the physician must depend for guidance as indications of visceral conditions, and thus may he deceive himself as to actual progress and so render false his prognosis.

VIII Relieve congestion always and wherever found. This is often best done with belladonna, i.e., atropine.

IX Reduce fever whenever present. "If with the elevation of temperature [as in a case of enteric fever]

there is a sharp hard, small, quick pulse, with hot dry skin, aconite will most satisfactorily control the fever and can be given in conjunction with Belladonna. If there is great nervous excitability with the local congestion, gelsemium will best control the fever. If there is sluggishness of the circulation of the skin, with a large full, hard, quick pulse veratrum is the best remedy. If there is threatened inflammation of serous or synovial membranes, with sharp, quick, cutting pains, then Bryonia will act admirably with belladonna and will control the temperature also" (Finley Ellingwood, "Directness in Drug Application," Alkaloidal Clinic, June 1901.)

X Disinfect the main sewage canal of the system whenever indicated. Employ intestinal antiseptics and of course remove the sewage as conveniently as possible. This practice is inculcated as an essential feature in alkaloidal treatment of any disease.

These advisory measures, which I have not taken from any text book but collected from numerous scattered writings, and roughly formulated for convenient study and reference, will not be properly appreciated without illustration. Let us first understand the important subject of dosage. Dr Abbott truly points out "there is no such thing in rational therapy as a fixed dose."

Under the old methods dose is modified by sex, age, weight, strength, habit, time, season, general condition and idiosyncrasy, each considered apart from the effect of the disease, therefore, in no instance, can the dose be more than roughly approximated to the probable need. The principles governing alkaloidal therapy do away with all this. The initial dose is made too small to do harm under any circumstances, it is given in a shape that allows it to be dissolved and absorbed almost as quickly as if given hypodermically, and it is repeated at short intervals until the desired effect has been obtained.

Here is where individual differences arising from the personal equation are equalised, one will require but two or three doses, while another will require ten or twelve to produce the same effect. And it is not impossible that the constant impression of small doses frequently repeated has the same power of controlling disease-processes (a power apparently so completely out of proportion to the amount of the agents used) that a film of oil has in preventing the development of waves in an ocean storm. He, however, is careful to point out that this does not preclude the administration, where indicated, of large doses.

Here is an illustrative prescription (from Abbott's *Helpful Hints for Busy Doctors*) showing how to treat with small doses. Each granule, be it understood, is always in a certain fixed minimum dose, and alkaloids are often very bitter. "Annie B., age 4 years. Fetid diarrhoea, with colic and fever."

R	No of granules	
Sulpho carbolate of zinc, gr $\frac{1}{4}$	20	No of doses } 20
Aconitine uncrystallized, gr $\frac{1}{12}$	4	
Hyoscyamine amorphous, gr $\frac{1}{60}$	2	
Codaine, gr $\frac{1}{2}$	10	
Saccharin	qs	

Sig. One dose every half hour until relieved.

"Now select the granules determined upon, put them all together in a vial, and direct on the envelope 'Dissolve all the granules in twenty teaspoonfuls of water, sweeten, and give a teaspoonful every half hour till relieved, then continue in hourly doses.' Be sure and tell the messenger that if Annie is not better by the time the medicine is half gone, they must send for you. You will likely never hear from this case again."

Here is another (from same). "A sharp pronounced fever with great depression, character unknown, very likely typhoid. Temperature 104°, pulse 120, tongue white, bowels have not moved for three days, head aches badly—in fact, this young man is, as he expresses it, 'All broke up.' You will probably decide to give

Aconitine for the fever, *Strychnine* for the depression, and sulpho carbolate of zinc for the intestinal decomposition that is undoubtedly taking place, as well as a flush of saline laxative. You will ask for two little dishes, individual butter plates I like best, sauce plates or saucers will do, cups inverted small glasses, eggcups, in fact anything at hand may be made use of. Always look to see if they are dry. Count out twelve *Aconitine amorphous*, gr $\frac{1}{12}$ and the same of *strychnine arsenate*, gr $\frac{1}{12}$ for one dish (*aconitine* is coloured pink for convenience in dispensing together this way), and twenty four of the zinc for the other. Direct one of each from the first dish, and two from the other together every half hour till you call again, which should be in five or six hours. At the same time prescribe a dose of saline [Abbott's magnesian sulphate (et magnesian carbonas?) effervescens] and direct a tea spoonful in half a glass of cold water hourly till the bowel moves freely."

The essential feature in the modern treatment of acute disease is the arrest of that tendency to congestions which eventually lead to organic lesions—inflammation, ulceration, suppuration, &c, with all their train of formidable concomitant symptoms, pyrexia, diarrhoea, delirium, emesis, melena, &c. &c. We must not, therefore (as we are taught to do) "wait till the symptoms develop" and so make exact diagnosis possible. We must prevent them developing, and cure the patient before serious organic lesion has been produced. Says Dr Abbott, this effect may be secured in all cases depending upon a controllable congestion, such as bronchitis, pneumonia, peritonitis and kindred conditions. Eruptive fevers will pass through their cycle under any form of treatment, but when treated alkalimetrically they do so in a mild and greatly modified form, while that class of affections of which typhoid fever may be taken as a type, may either be aborted in the early stages or if seen too late for that, may be conducted through the regular course to a quick and safe termination like the eruptive fevers. The early control of the congestive element means much as to the subsequent course of any febrile attack, whether it be that of a specific fever or of a local inflammation" (*Helpful Hints*). He elsewhere says "I cannot too strongly emphasise the importance of instituting a strong, active treatment, directed to the dissipation of the prominent symptoms, at the earliest possible moment of attack, and before the danger has definitely located itself."

But one of his older disciples, Dr W L Coleman, of Texas, now goes much further. In the January 1901 issue of the *Alkaloidal Clinic* ('the Jugulation of Acute Disease'), he not only issues a challenge to prove his guarantee in every uncomplicated case of 'slow fever' (so called typho malaria, ordinarily often running into four weeks) "to discharge them all convalescent within ten days from the commencement of the fever in each case, provided I see them and institute treatment within the first three days of the fever", which, however, is confirmed by others with regard to enteric fever, but claims to 'jugulate' small pox. When treatment is instituted on the first day of the initial fever in ordinary cases, the fever and suffering incident to that stage are greatly mitigated, and the eruption makes its appearance at the usual period, the evening of the third or morning of the fourth day, in red fleabite looking points, but goes no further, never becoming pimples or vesicles, and consequently never pustular. Hence pitting cannot result, and about the eighth day, when secondary fever usually occurs and the danger is greatest, the patient is practically convalescent and desquamation nearly complete."

Measles, scarlet fever, and even whooping cough are claimed to have been jugulated. But I have said enough for the present to earnestly invite the serious attention of the profession to this great advance in scientific medicine.

ON THE CHEMISTRY AND TOXICOLOGY OF *NERIUM ODORUM*, WITH A DESCRIPTION OF A NEWLY-SEPARATED ACTIVE PRINCIPLE

By RAI CHUNILAL BOSE, BAHADOOR, M.B., F.C.S.,
1887 SURABON

(Concluded from page 290)

Chemical notes—In isolating the poisonous principles from the root of the *Nerium Odorum*, I submitted the drug to two altogether separate methods of analysis. One of these methods was that adopted by Mr Greenish in the analysis of his plant and described by him in the *Pharmaceutical Journal* 1881, page 873, with certain important modifications which will be described later on, the other was the recognised method of plant analysis formulated by Dragendorff. My object in doing it both ways was to check the results of one method by those of the other. I am glad that I adopted this plan, as it enabled me to detect a poisonous principle in the plant, which had hitherto remained undiscovered.

Mr Greenish in his valuable paper on the Chemical Composition of *Nerium Odorum* described only two poisonous principles which he could isolate from the root bark of this plant. I have, however, been able to detect three different poisonous principles in the root of *Nerium Odorum*. One is readily soluble in cold water and is identical with the Neriodorin of Mr Greenish (which, as I shall show later on, is not a new organic principle but only a Saponin). The second principle is insoluble in cold water, but soluble in boiling water and chloroform and very slightly soluble in ether, this is identical with the other principle Neriodorin of Mr Greenish. The third principle is insoluble in cold water as well as boiling water but very readily soluble in ether, this principle, I believe, has for the first time been brought to light, and I have accordingly called it by the name of *KARABI* (Karabi being the Bengali name of the plant) in my paper.

I shall first briefly describe my results as obtained by Dragendorff's plan of analysis.

The roots were carefully cleaned of all dirt and mud and left exposed to air so dry, first, at the ordinary temperature of the laboratory (between 70° and 80° F), and then in a warm place (about 100° F). It was next powdered and passed through a sieve. The powder was then bottled up for future use.

Moisture—Two grammes of the powdered root were put in a tared platinum capsule and placed in an air bath, at first, at 100° C for three hours and then at 110° C till it ceased to lose weight. It was next placed under a desiccator and weighed when cool. Moisture was calculated to be 13.14 per cent.

Ash—The moisture free substance was next ignited, the usual odour of the burning of vegetable matter was noticed. The ash calculated on the moisture free root was 6.27 per cent.

The ash was of a brownish colour and strongly alkaline in reaction. It was partly soluble in cold water. The soluble ash contained carbonates, sulphates and chlorides of potassium and sodium. No phosphates or lime salts were detected in it. The insoluble ash consisted chiefly of Carbonate of lime, iron, with gritty siliceous matter and traces of Aluminium, Magnesium and Copper.

Extracts—Twenty grammes of the dried powder root were successively treated with 200 CC each of Petroleum, Ether, Ether absolute, alcohol and distilled water, the solvents were separated, evaporated to dryness and examined. The root gave the following percentages of the different extracts—

(a) Petroleum ether extract	2.88 per cent
(b) Ether extract	1.38 "
(c) Absolute alcohol extract	2.40 "
(d) Aqueous extract (after deducting the weight of the ash)	5.81 "

(a) *Petroleum ether extract*—A thick greenish yellow viscid oily substance which partially solidified on exposures to air at the ordinary temperature. Warm absolute alcohol dissolves it (with the exception of a few brown floccs) forming a yellow solution, which becomes turbid on cooling depositing whitish flakes. The alcoholic solution has a nauseating but not bitter taste. The whitish flakes examined under the microscope were found to consist of fine curved needle like structures, some branched. The alcoholic solution on spontaneous evaporation deposited drops of thick yellow oil, which readily saponified with alcoholic potash on being warmed. The soap was taken up with water and treated with diluted Hydrochloric acid, when a copious deposit was thrown down. It was filtered and the filtrate tested for glycerin with negative results. No alkaloid was obtained in the petroleum ether extract.

(b) *Ether extract*—Is of a pale greenish yellow colour, having a pleasant aromatic odour. Under the microscope a large number of narrow oblong plates was discovered in it. The ethereal extract was first treated with cold water, which practically dissolved nothing, although it was of a slight acid reaction, the substance was next treated with absolute alcohol, which dissolved a part of it, forming a clear yellow solution. It was separated and exasperated to dryness, when a brownish-yellow sticky residue was left.

This is the new principle, *KARABIN*, referred to in the second paragraph of the Chemical Notes, it possesses marked toxic properties. In its physiological action, it closely resembles the *Neriodorin* of Mr. Greenish, but in its behaviour with certain solvents as well as in some of its chemical reactions, it is altogether different from either of the two principles (*Neriodorin* and *Neriodorin*) obtained by him from the root bark of *Nerium Odorum* as will be seen from the statement given below.—

(a) Behaviour with solvents

	NERIODO REIN	NERIODO RIN	KARABIN (the newly dis- covered prin- ciple)
Water	Readily soluble	Soluble in boiling water only	Insoluble in cold and boil- ing water
Absolute Alcohol	Slightly soluble	Soluble	Soluble
Ether	Insoluble	Very slightly soluble	Very readily soluble
Benzene	Insoluble	Insoluble	Soluble

CHEMICAL NOTES

Behaviour with Chemical reagents

	NERIODO REIN	NERIODO RIN	KARABIN (the newly dis- covered prin- ciple)
Conc. H_2SO_4	Maroon brown passing to violet. On exposure to the fumes of HNO_3 or Bromine, no change was noticed	Yellowish brown, on exposure to the fumes of HNO_3 or Pr , it immedi- ately chan- ges to a beautiful mauve violet	Light brown, on exposure to the fumes of HNO_3 or Br , a faint violet brown colour deve- lops after some time. The differ- ence between it and the NERIODO RIN is very well seen when the two substances are tested side by side

	NERIODO PLAIN	NERIODO RIN.	KARABIN (the newly dis- covered prin- ciple)
Conc. H_2SO_4 + KNO_3	No change	Reddish violet colour.	No reddish violet colour
Conc. HCl 1 + heat	No change	Dissolves to a yellowish solution, no separation of flocs	Partly become soluble, form- ing a greenish yellow solu- tion with separation of flocs of a dark greenish blue colour
Fehling's solution + heat	No reduction	Reduction	No reduction
Boiled for 3 hours with 2 percent HCl , neu- tralised with KOH , and then heated with Feh- ling's solu- tion	Reduction	Reduction	No reduction

Physiological action of KARABIN—A minute quantity of KARABIN was rubbed on the tip of the tongue, after a short time, a slight bitter taste was noticed attended with an acrid pricking sensation, followed by numbness which lasted for about 15 minutes.

First Experiment—Half grain of KARABIN was dissolved in a few drops of rectified spirit, and the solution diluted with about 2 drachms of distilled water, a copious separation of a yellow resin like substance took place, the turbid watery solution was injected into the stomach of an adult healthy cat at 1.5 p.m.

1.10 p.m.—Constantly putting out its tongue and licking its lips as if to allay some unpleasant sensation, making frequent movement of the ears.

1.13 p.m.—Frothy saliva dribbling from the mouth, is uneasy, passed urine and a healthy stool.

1.15 p.m.—Vomited a large quantity of a yellowish white frothy fluid, profusely salivating.

1.20 p.m.—Frequent ineffectual attempts at vomiting, moaning, great weakness in the limbs, falls down in an attempt to move, respiration so hurried that they could not be counted, passed a soft dark coloured stool, is slightly drowsy.

1.37 p.m.—Marked spasms of the front and hind legs as well as of the muscles of the abdomen, constant tremors all over the body, more marked in the head and in the front legs, still retching, cannot move or remain steady on account of the spasms which are not of a tetanic character, frothy saliva still dribbling from the mouth, pupils normal, is sleepy and dozing and appears to be in a state of intoxication and is extremely debilitated.

1.48 p.m.—Vomited a small quantity of whitish frothy fluid, is able to move slowly, gait tremulous and staggering.

2.15 p.m.—Is quietly sitting in a corner in a condition of stupor with its head hung between the fore legs, the muzzle almost touching the ground, now and then making a peculiar rocking movement of the head, appears insensible to all sounds and disturbances, breathing much quieter, but still shallow and quick, occasionally starts up as if from deep sleep but immediately returns to the condition of stupor.

3 p.m.—Same condition.

4 p.m.—Same condition.

The cat was found all right next morning at 10 A.M.

Second Experiment—An adult healthy cat was used, heart's beat 128 per minute

3 grain of *Karabin* was dissolved in a few drops of rectified spirit and the solution is diluted with about 2 drachms of distilled water, the turbid solution was injected into the stomach of the cat at 12 40 P M

12 45 P M—Putting out its tongue and licking its lips as noticed in the first experiment, moving its head and frequently stiffening its ears

12 50 P M—Heart's beat 120

12 55 P M—Vomited a large quantity of whitish frothy fluid, profusely salivating, occasional spasms of the muscles of the back noticed

1 P M—Passed a soft feculent stool, vomited a quantity of whitish frothy fluid

1 8 P M—Passed a small stool, vomited again, heart's beat 120

1 11 P M—Vomited again, still salivating, gait staggering, respiration hurried and irregular, spasmodic contractions of the tail and the legs

1 23 P M—Vomited again, heart's beat 104

1 55 P M—Is in a condition of stupor, breathing slow and long drawn, occasional starting

2 30 P M—Heart's beat 102, respiration slow, 16 per minute, is still under deep narcosis, can be roused by a shake, but the animal immediately falls to sleep again

3 30 P M—The cat is fully awake, but rather dull, is sitting quietly, heart's beat 118

4 P M—The cat appears to have perfectly recovered

NERIODORIN—Produces very similar physiological action which will be described later on

The root was found to contain one per cent of **KARABIN**

The ultimate analysis of **KARABIN** by combination gave the following results—

C = 63.4 per cent

H = 12.3 „

O = 24.3 „

The formula deduced from the percentage composition of the substance is $C_{21}H_{43}O_6$

The portion of the ethereal extract which was insoluble in absolute alcohol was found to consist of an acid resin and an indifferent resin

(c) *Absolute Alcoholic Extract*—A yellow varnish like residue having no particular odour. It was slightly soluble in waters forming a clear yellow solution having an acid reaction. This solution had a very slight bitter and acrid taste. The portion which was insoluble in water was treated with water acidulated with a few drops of diluted sulphuric acid and agitated successively with petroleum ether, benzene and chloroform. The petroleum ether extract consisted of minute traces of a yellowish oily deposit. The benzene extract consisted of a small quantity of a pale yellow coloured sticky deposit, when rubbed on the tongue it produced the characteristic pricking and numb sensation of *Karabin*. When treated with sulphuric acid and exposed to nitric acid fumes, very slight violet colour was developed after some time. It was identified to be **KARABIN**. It was soluble in ether and benzene but insoluble in boiling water. When treated with $COCl_2$ HCL, it became decomposed with the separation of dark greenish blue flocks. The chloroform extract was of a yellowish colour, sticky, and produced marked pricking and numbness of the tongue. Sulphuric acid with nitric acid vapours immediately produced mauve violet colour. It was soluble in boiling water, but insoluble in ether. It was identified to be the **NERIODORIN** of Mr Greenish.

The acid watery solution was next neutralized with carbonate of soda and agitated successively with petroleum, ether, benzene and chloroform. The petroleum ether extract was practically nil. The benzene extract consisted of a very small quantity of a yellowish sticky substance which produced slight numbness on the tongue when rubbed on it. It had no appreciable bitter taste.

The chloroform extract consisted of traces of a yellowish deposit, no bitter taste, no numbness produced when rubbed on the tongue.

The portion of the alcoholic extract which was insoluble in acidulated water was found to be insoluble in petroleum ether, ether and benzene. It was soluble in chloroform. It possessed slightly bitter taste and produced slight numbness on the tongue. 25 grains given to a healthy cat produced vomiting in 10 minutes, followed by salivation. No further symptoms were noticed.

(d) *Aqueous Extract*—The aqueous extract was of a dark brown colour, slightly bitter to the taste and acid in reaction. It contained tannic acid and a saponin like principle. No pectin was detected in it, 2 grains of the extract were given to a cat. The animal vomited once after half an hour, there was slight salivation, no further symptoms.

I shall now describe the results of analysis obtained by adopting Mr Greenish's method with certain modifications.

About 100 grms of the powdered root were thoroughly exhausted with alcohol 80 per cent. The alcoholic solution was evaporated to a small bulk, when a quantity of dark brown oily matter separated. On the addition of water to the concentrated alcoholic solution, a large quantity of a brown sticky resinous mass separated from a yellowish turbid liquid, which was acidulated with a few drops of diluted sulphuric acid and agitated successively with petroleum ether, ether, and chloroform after agitation with chloroform, when the two layers separated, a small quantity of brown oily-looking globules was seen floating between the two layers. The oily looking drops were separately collected and washed with ether and chloroform, in both of which they were insoluble. The aqueous solution was then neutralized with carbonate of soda and agitated with chloroform.

The brown sticky resinous mass which separated on the addition of water to the concentrated alcoholic solution of the drug was treated with petroleum ether, which on evaporation deposited a large quantity of a thick brownish oil, having no particular odour, and possessing a nauseous but not bitter taste. A search was made for alkaloids with negative results.

Acid Petroleum Ether Extract deposited only traces of a light greenish yellow oily substance.

Acid Ether Extract consisted of a small quantity of a brownish-yellow sticky residue possessing slight bitter taste, it produced a marked acid and pricking sensation when rubbed on the tongue, followed by numbness. When treated with strong sulphuric acid and nitric acid vapours, it slowly developed a reddish violet colour, which led to the supposition that it was slightly contaminated with *neriodorin* (which is slightly soluble in ether). It was accordingly purified by being repeatedly boiled with water (**NERIODORIN** being soluble in boiling water). The purified extract was of a brownish yellow colour, sticky, and satisfied all the tests for *neriodorin* described above. One of the modifications made in Mr Greenish's method of analysis referred to before consisted in using ether as one of the solvents which took up a portion of the newly discovered principle *Karabin*, the remaining portion was recovered also by means of ether from the alcoholic residue after it had been extracted with acidulated water to be described hereafter.

Oily-looking globules—These separated between the chloroform and aqueous layers, and were thoroughly washed with ether and chloroform in which they remained insoluble. They very readily dissolved in cold water, forming a pale yellow solution of neutral reaction. The substance was insoluble in carbon disulphide, benzene and amyl alcohol. It frothed considerably when agitated, which at once suggested its being a variety of saponin. The watery solution on evaporation left a brownish white residue, possessing a slightly bitter taste, followed by a slight tingling and numbness on the tongue which lasted

only for a short time. The substance gave the following reactions with the various reagents—

Conc H_2SO_4 —A maroon brown colour passing to violet, on the addition of bichromate of potassium, it turned green after a short time.

Conc HNO_3 —Almost colourless solution, turning yellow on the addition of potassium bichromate.

Dilute NH_4OH —Dissolves readily, forming a pale yellow solution which froths much on agitation, on neutralizing it with acetic acid, a turbidity was produced.

Dilute KOH —The same as NH_4OH .

Tannic acid—A white precipitate.

Basic acetate of lead—A white precipitate.

FeCl_3 —A turbidity, which disappeared on heating, and the solution turned brown.

Nessler's reagent . . . yellow colour changing to greenish on drying.

By itself, it did not reduce Fehling's solution as stated by Mr Greenish, but when boiled for three hours with two per cent hydrochloric acid, it reduced Fehling's solution which was proof of its being a glucoside. In its chemical characters, it bears a strong resemblance to the saponin obtained from *bilma* by the late Dr Warden and the writer (*Pharmaceutical Journal*, 1892, p 302).

It will thus be seen that this principle which has been named *Neriodorein* by Mr Greenish is only a variety of saponin. The characters of a saponin as described by Blythe in his book on Poisons, namely, that it is a white amorphous powder, insoluble in ether, readily soluble in water, which froths a good deal on agitation, precipitating with tannic acid, were with no exception found to be present in the *Neriodorein* of Mr Greenish. As toxic properties of saponin are well known, they were not investigated in the sample obtained from *nerium odorum*.

The acid chloroform extract—A bright shining golden yellow deposit, not easily reduced to powder, having a bitter taste, when rubbed on the tongue, it produces an acid pricking sensation, followed by numbness which lasts for a short time only. It is insoluble in cold water, in petroleum ether, in benzene and in carbon disulphide, very slightly soluble in ether, but soluble in boiling water. Conc sulphuric acid dissolves it, forming a yellowish brown solution which immediately turns to a beautiful mauve violet on exposure to the vapours of nitric acid or bromine (Cf *karabin*). When heated with concentrated hydrochloric acid, it formed a greenish yellow solution without the separation of dark greenish blue flocks (Cf *karabin*). With sulphuric acid and nitrate of potassium, a reddish violet colour was developed (Cf *karabin*). It was readily soluble in alcohol from which a copious precipitate of a yellow resin like substance took place on the addition of water. In this character, it resembles *karabin*. This is the *neriodorein* of Mr Greenish.

Mr Greenish heated *neriodorein* with dilute hydrochloric acid in a sealed tube and found that it was broken up into a glucose which reduced Fehling's solution, and he suggested that it was a glucoside. I have, however, found a solution of *neriodorein* in hot water by itself reduced Fehling's solution, and that heating with dilute hydrochloric acid does not increase its reducing properties. Moreover, the behaviour of the alcoholic solution of *neriodorein* on the addition of water would point to its being a resin and not a glucoside. The same remarks apply also to *karabin*, which by itself does not reduce Fehling's solution, nor is broken up into a glucose when boiled for hours with diluted hydrochloric acid. Neither of the two principles contained nitrogen.

Two grains of *neriodorein* were dissolved in a few drops of alcohol to which about two drachms of distilled water were added, a copious separation of a yellow resin like

substance took place as described before. This was injected into the stomach of a healthy adult cat at 11.50 A.M.

Soon after, the animal began to constantly put out its tongue and lick its lips, a profuse quantity of frothy saliva commenced to dribble from the mouth, and the animal became restless. Frequent movement of the ears was noticed.

11.55—Vomited a copious quantity of yellowish frothy fluid, is very ill and restless, moaning and retching.

11.57—Twitchings and great weakness in the hind legs, in an attempt to move, it fell down on one side, breathing hurried.

12 noon—Tremors and twitchings noticed over the whole body, is still retching, is quite dull, almost in stupor, frequent spasms of the muscles of the extremities.

12.0 P.M.—The animal fell on its side, had marked tetanic convulsions and died.

Post mortem examination held about an hour after death.

Rigor mortis absent, pupils widely dilated, mouth half open, tongue protruding out and bluish at the tip and edges, liver congested, kidneys congested, stomach of a uniform pink colour, rugae prominent, it contained a small quantity of colourless mucus and a few worms.

Duodenum—Patches of congestion.

Jejunum—Ditto (but fewer patches than in duodenum).

Ileum—No congestion, contained soft dark green fecal matter.

Large intestine—Healthy, contained soft dark green faeces.

Lungs—No congestion noticed.

Spleen—Ditto.

Heart—Right heart full of dark clotted blood, left heart contained fluid blood only.

The venous system was found full.

Brain and spinal cord not examined.

Second experiment—A quarter grain of *Neriodorein* was given to a healthy adult cat.

About ten minutes after the animal commenced putting out its tongue and licking its lips and moving its ears. There were frothy salivation and slight restlessness. After half an hour vomited a large quantity of undigested food. No tremors or spasms noticed, the animal recovered.

The acidulated solution of the alcoholic extract after separation of the chloroform was neutralised with carbonate of soda, when a slight whitish precipitate was thrown down. It was agitated with ether, which dissolved the precipitate. The ethereal solution on spontaneous evaporation left a very small quantity of a white deposit, which was found to consist of needle shaped crystals under the microscope. This substance when rubbed on the tongue had no bitter taste and did not produce any tingling or numbness. It was dissolved in a few drops of acetic acid, dried on water bath and taken with a few drops of distilled water, and the solution was tested with the following reagents—

Mayer's reagent—Whitish precipitate.

Picric acid—Yellow precipitate consisting of irregular six sided plates, like certain forms of uric acid crystals, under the microscope.

Potash bismuth iodide—Brownish flocculent precipitate.

Gold chloride—Yellowish precipitate.

Platinic chloride—Yellowish precipitate.

Caustic potash—White precipitate.

Ferrocyanide of potassium—Whitish precipitate.

The substance therefore possesses the characters of an alkaloid, but the quantity obtained was so small that further investigations into its chemical composition and physiological action could not be proceeded with.

The dark brown residue of the alcoholic extract, after the treatment with the various solvents described before, was still found to possess a slight bitter taste, and when rubbed on the tongue produced an acrid sensation and numbness. Half a grain of this substance was given to a healthy adult cat, the animal suffered from frothy salivation, vomiting and restlessness. The animal also exhibited the peculiar symptoms of movement of the ear and putting out the tongue and licking its lips as seen with *Neriodorin* and *Karabin*. No spasms, twitchings or tremors were seen. The animal recovered within an hour.

The above described action of the alcoholic residue on the animal suggested that it still contained some *Karabin* or *Neriodorin*, presumably the former, as it is insoluble in water and could not have been taken up in any quantity by acidulated water from the alcoholic extract of the drug, but probably only that portion was removed by ether, which remained in suspension in the acidulated watery solution. The residue was accordingly dried on a water bath and then over sulphuric acid and treated with ether, which dissolved a portion of it and left on evaporation a moderate quantity of a brownish yellow sticky residue, which gave all the reactions of *Karabin*. The alcoholic residue after separation of the ether was agitated with chloroform, which dissolved a small portion of it, and on evaporation left a dark brownish residue, which was found to contain traces of *Neriodorin*.

Chemical composition of the leaves—I have stated before that all parts of the plant possess toxic properties. Leukowsky, Schmiedeberg and others analysed the leaves of *Nerium odoratum*, the former separated two poisonous principles which he considered to be alkaloids, and which he named *Oleandrine* and *Pseudocurarine*. Schmiedeberg, in 1883, separated two other principles besides *Oleandrine*, all of which he considered to be glucosides, he called the other two glucosides as *Nerine* and *Nerianthine*. In 1890 Piesczek separated *Nerine* of Schmiedeberg from the bark of *Nerium odoratum*, he found that when a portion of *Nerine* was dissolved in strong sulphuric acid and then exposed to the vapour of bromine, a splendid violet purple colour was produced. It therefore appears that the *Nerine* of Schmiedeberg is no other substance than the *Neriodorin* of Mr Greenish.

Separation and identification of the poison in viscera, &c—From the study of the chemical characters of *Neriodorin* and *Karabin* and their behaviour with different solvents, the following directions may be laid down for the extraction of these poisonous principles from the viscera in a case of *Nerium odoratum* poisoning. The absolute alcoholic extract obtained by Stas's process should be treated with water acidulated with a few drops of diluted sulphuric acid and then agitated successively with ether and chloroform, the former will take up any *Karabin* and the latter *Neriodorin* which may be identified (1) by their producing the peculiar acrid pricking sensation on the tongue followed by numbness, (2) by their behaviour with concentrated sulphuric acid and fumes of nitric acid, and with concentrated hydrochloric acid and heat, and (3) by the previously described toxic symptoms produced on animals.

Fatal dose for an adult human being—Half a grain of *Karabin* nearly proved fatal to a cat. Two grains of *Neriodorin* killed a cat in 15 minutes. One grain of either of these substances may, therefore, be considered to be the fatal dose for an adult cat. From an analogy of the action of other vegetable poisons on cat and man, it will be within the mark if the fatal dose of either of these principles for the latter, be fixed at five times that for a cat. In the case No 4 about 180 grains of the root produced alarming symptoms, but did not prove fatal. As the root contains about one per cent of *Karabin*, and probably an equal amount of *Neriodorin*, 250 grains (about $\frac{1}{2}$ ounce) of the root (which would

yield 5 grains of the two active principles), may be taken as the average fatal dose for an adult human being.

The *Neriodorin* of Mr Greenish which, as I have shown before, is a *Saponin* only, may be neglected, as its toxic properties are of a much milder character than those of either *Karabin* or *Neriodorin*.

In conclusion, I wish to express my obligation to Captain C H Bedford, M.D., D.Sc., Chemical Examiner to Government, for kindly supervising the whole paper, and to Assistant Surgeon Hira Lal Sinha, B.A., L.M.S., for assistance in making experiments.

POISONING BY THEVETIA NERIFOLIA (YELLOW OLEANDER)

By JADUB KISTO SEN,

Assistant Surgeon, Contai.

CASE I—Surju Bewah, a young Hindu widow, resident of village Jhowa, under the jurisdiction of Contai Thana, rubbed two seeds with treacle on a mortar and swallowed them down on the 5th of June 1897, to procure abortion. Almost immediately after taking the poison, she felt a burning pain in the throat, vomited and purged several times, became much prostrated, and had several fainting fits.

She was brought to hospital by the police on the following day when her pulse was found to be very soft, compressible, and slow, 52 in a minute, the pupils were normal and acted on by the stimulus of light, mind clear, skin soft and perspiring, she felt giddiness in the head, felt thirsty and was much troubled with a dragging sensation in the tongue. These symptoms gradually disappeared with the exception of slowness of the pulse, and giddiness in the head which lasted till the 9th of June, when she gave birth to a healthy male child.

The Chemical Examiner detected the presence of the active principle of the poison in the deposit on the stone on which the seeds were rubbed with treacle (Report No 1024B, 11th August 1897).

She was tried by the Sessions Judge of Midnapore and was sentenced to six months' imprisonment.

CASE II—Wedemisser Bibi, a Mahomedan female of Jalakhabad, a village close to Contai, took two seeds on the 18th September 1897, to commit suicide. She was admitted into hospital on the following day, suffering from purging, vomiting, pain in the throat with severe headache and fainting fits alternating with drowsiness, pupils normal and acted on by light, her heart-sounds were weak, and her pulse was soft, feeble and compressible, 36 in a minute. It remained so for three days, the headache and giddiness gradually disappeared with the rise in the tone and frequency of the pulse.

She was tried by the Subdivisional Magistrate of Contai and sentenced to three days' imprisonment.

CASE III—Daimu Bewah, a Hindu widow of village Aori, under the jurisdiction of Contai Thana, took two seeds on the 12th February 1898 after a quarrel with her sister in law. She was admitted into hospital with purging, vomiting, headache and giddiness in the head, her heart sounds were very weak and pulse was 140 in a minute, soft, irregular, compressible, was much troubled with a gripping pain about the navel. The improvement in the pulse commenced with the abatement of headache and giddiness.

She was tried by the Subdivisional Magistrate of Contai and sentenced to one week's imprisonment.

CASE IV—On the 24th November 1898, Kumar Jana fell ill with purging, vomiting, giddiness in the head and fainting fits after taking a meal of stale rice, left in an open pot by his wife, with whom he was in good terms. He was brought to me for examination by the police on the night of the 27th November, when I found his pulse soft, compressible and slow, 52 in a minute, he looked dull and walked with a slow and unsteady gait. I gave my

opinion that he was convalescing from *Korobi* poisoning, which police on inquiry found to be correct.

From the above cases it will appear that this poison is used by the females, not only to commit suicide and to procure abortion, but also for homicidal purposes.

The poison is a virulent cardiac sedative, it causes death by the failure of the action of the heart. I treated first three of my cases with brandy, and was satisfied with the result, I was afraid to try the hypodermic injection of strychnin. In case No 3 I was obliged to inject ether hypodermically. The *post mortem* appearances which I observed in cases of death from this poison are given in the subjoined table —

During my absence on leave, Assistant Surgeon Chinn Lal Das examined, on the 13th of May 1891, the body of a Mohammedan female, named Muchun Bibi, sent in by police from police station Bhagabanpore. From the presence of an abrasion on the neck and from the *post-mortem* appearances in the internal organs, he pronounced the case to be one of death from asphyxia, but the Civil Surgeon of Midnapore did not agree in his opinion and ordered the stomach and its contents, to be submitted to the Chemical Examiner for analysis, which revealed the presence of the active principles of the poison in them (Report of Chemical Examiner, dated 11th June 1891.)

Date	Name	Sex	Caste	Age	Village and Thana	Brain and its membranes	Lungs	Heart	Stomach	Intestines	Liver	Result of chemical analysis	No and date of the <i>post mortem</i> report
7-12-93	Padma Dasi	Female	Hindu	25	1 ul camp, Contai	Con- gested	Con- gested	Both sides filled with fluid blood No clots	Con- gested in patches	Healthy	Con- gested	Active prin- ciple of the poi- son de- tected in the con- tents of the stomach	42-B 17-7-91
3-3-97	Nemi Tantini	Do	Do	25	Sultan- dia, Ram- nagore	Mem- branes con- gested Brain pale	Do	Both sides con- tained clotted blood	Con- gested at lesser curve Con- tained a few frag- ments of seeds resemb- ling <i>Korobi</i> seeds	Do	Do	Do	580-B 17-5-97
30-4-97	Robi Dasi	Do	Do	25	Kachra- gera, Contai	Mem- branes con- gested Brain soften- ed from putre- faction	Con- gested small frag- ments of seeds in the trachea bron- chia	Empty	Con- gested	Do	Do	Do	788 B 2-7-97

A CASE OF COBRA (?) BITE TREATED SUCCESSFULLY WITH CALMETTE'S SERUM (ANTIVENENE)

E H BINGLEY, M.R.C.S., L.R.C.P. (LOND),
Chief Medical Officer, Bengal-Nagpur Railway

At 8-45 P.M., on the 24th August, I was asked to come and see a coolie woman who had been bitten by a large snake, supposed to be a cobra, while walking in the scrub jungle near my house.

History—The patient's friends stated that she had gone out into the jungle near her hut at about 7 o'clock and came back a few minutes later saying she had been bitten on the leg by a big snake. It was very dark and raining at the time, and no attempt was made by any one

present to follow up the snake. She did not complain of much pain, and no sort of treatment was attempted. Her friends stated that she soon became stupid and drowsy and staggered in her gait, she spoke indistinctly, and within an hour of her return to her hut she was in an unconscious state —

Condition when first seen by me—

I arrived at the hut where the patient was lying at 9 P.M., her condition was as follows —

She was lying on her back, her head slightly raised on a bundle of cloth serving as a pillow, her limbs stretched out straight, and flaccid. All the deep and superficial reflexes were lost.

The jaws were tightly clenched, and a great quantity of frothy saliva was flowing from the mouth, at intervals there was a spasmodic movement in the throat.

The conjunctival reflex was lost, the pupils widely dilated and insensitive to light.

The marks of the snake's fangs were clearly defined on the inner surface of the left leg, a hand's breadth above the inner malleolus. The part round the wound was very slightly swollen.

The respirations were regular but somewhat laboured (18 to the minute). Pulse feeble but regular (80 to the minute).

Directly the case was reported to me, I sent a messenger to the B N Ry dispensary, which is over a mile distant from my bungalow, asking the Assistant Surgeon to bring over a serum syringe and 20 CC of antivenene at once. He did not arrive till 9.45, and in the interval I had a good opportunity for observing the patient's symptoms. She remained all the time in a condition of profound coma, there was no start, but the spasmodic movements of the throat increased in frequency and the pulse became feebler.

Taking into consideration the length of time that had elapsed between the time of the infliction of the injury, and of my first seeing the patient, and her symptoms indicating that the poison had been fully absorbed into the system, I made no attempt at any local treatment.

Treatment—At 9.45 I injected 10 CC of Calmette's serum deeply into the cellular tissue over the lumbar region on the left side. The patient was absolutely unconscious at the time, her friends regarding her as moribund.

The effect of the serum was observed ten minutes after it had been injected, when the patient showed signs of returning consciousness. She opened her eyes and looked about her. The pupil contracted slightly to light. Soon after the patient lifted her hands, and movements of the legs followed. She next moved her lips and seemed to be trying to speak. Several questions were put to her and she answered promptly by nodding her head. Some water was given to her, but she made signs that she could not swallow. The teeth remained tightly clenched, and the spasmodic movements of the throat were frequently repeated, saliva continued to pour from the mouth in great quantities.

I consulted with my Assistant Surgeon, Babu Satish Chunder Sen, L.M.S., and we decided to give another dose of serum. I accordingly injected another 5 CC into the lumbar region a little above the seat of the first puncture at 10.45 P.M. The patient moved her body violently and groaned loudly when the injection was being made. This was the first sound she had made since about 8 P.M. according to her friends. The throat spasms ceased at the same time and within half an hour the symptoms of poisoning had disappeared. Urine was not passed till the afternoon of the following day. The only symptom complained of by the patient twelve hours after the second injection was slight giddiness.

The serum used was obtained from Messrs Smith, Stanistreet & Co., of Calcutta, and bore the mark of the Lille Pasteur Institute, dated March 1900.

Remarks—The natives present were all convinced that the woman had been bitten by a cobra, and the symptoms seemed to me to indicate that the venom absorbed into the system was colubrine rather than viperine. The throat symptoms, the comparative absence of pain and the slight local disturbance, I think, are sufficient to support this diagnosis.

Dr Charles J Martin, in his article in Vol II of Clifford Allbutt's System of Medicine, however, states that in poisoning by colubrine venom consciousness is not absolutely lost, and that the pupil is contracted, not dilated. I would suggest as an explanation for this apparent discrepancy, that the pupil is at first contracted and subsequently becomes dilated when the intoxication is complete, as in morphia poisoning. The symptoms observed in this case seem to me to indicate that a very large dose of venom was absorbed, and no local treatment having been attempted it was taken into the circulation without check.

The serum was injected at least three hours after the infliction of the bite, and was administered under most unfavorable conditions. I think its efficacy has been strikingly demonstrated in this case.

It is of course to be regretted that the snake could not have been secured, but in all the cases that have ever come to my notice, with one exception, the snake has escaped. The history of nearly all cases of snake bite in this country is that the patient was bitten either while sleeping in the open or when walking at night in the jungle, and under these circumstances it is rarely that the snake can be secured.

CASE OF SNAKE BITE AND ANTIVENENE

By B JOWALA PROSAD,

Assistant Surgeon, Moradabad

CHUNDO, a Mohomedan maid servant, aged about 50, came to hospital at about 5 P.M., on 27th January 1901. On arrival she stated she was bitten by a cobra, which was lying in a pile of wood which she had gone to fetch for the kitchen. She was suddenly bitten on her right index finger, and on looking at the animal she found it to be a black snake. She at once put on a tight ligature round the base of the finger and made to the hospital without delay, while the snake disappeared among the wood. According to her statement not more than 10 minutes were spent between the bite and arrival at the hospital. On examining I found a small puncture at the tip of the finger which was turgid and swollen owing to the application of the ligature. On admission she complained of tingling and numbness in the finger and increasing giddiness and prostration and dizziness of the throat.

Treatment—The finger was washed with 1 in 60 solution of chloride of lime and well bled and dressing of the same lime solution put on the wound and about.

Then the full dose of antivenomous serum, which was in reserve, was injected hypodermically in the lower third of the forearm, i.e., just above the wrist, and the ligature removed. The patient within a short time began to feel better and lively, and she ultimately recovered and went away to her village.

A Mirror of Hospital Practice.

SURGICAL CASES FROM THE SAMBHU NATH PANDIT HOSPITAL, CALCUTTA

By E HAROLD BROWN, M.D.,

MAJOR, I.M.S.,

Surgeon Superintendent

CASE I—Compound depressed fracture of the skull, trephining, recovery.

Abdul Wahib, aged 25, was admitted to the hospital on the 12th of July, with a wound on the back of his head, which was bleeding profusely.

A friend who accompanied him said that while working on a steamer, about nine hours previously, the patient fell down the hold, a distance of eight or nine feet, landing on the back of his head. He was picked up, and was found to be bleeding and quite unconscious, he was attended to by a hospital assistant soon after, who sent him to the hospital early in the morning, and I saw him on admission.

He was almost unconscious, responding feebly when shouted at or shaken, but he was unable to reply to questions, and disliked being interrogated.

He was immediately put under chloroform, the scalp was shaved, and the parts round thoroughly purified with strong solution and a nail brush, the external wound, which was over the occipital bone on the right side, was enlarged, and it was found that there was an extensive fracture of the occipital bone, running obliquely from above downwards, the central portion being considerably depressed. There was also free oozing from the seat of fracture, which continued throughout the subsequent manipulations.

I applied the crown of a trephine, and removed a circle of bone, after which elevation of the depressed portion was easily effected, but it was evident that there was no pulsation of the brain. As this pointed to compression of the brain, presumably by a clot, I made an incision into the dura mater, giving exit to a considerable amount of fluid blood, and exposing a fair sized clot, which was gently removed. A stream of warm boric lotion was allowed to play on the parts for a minute or two, and the flaps were readjusted, a horse hair drain having been introduced, the wound was dusted with iodoform, and a dressing of salicylic wool applied, which was held in position by a capeline bandage.

The patient was more conscious that afternoon, took his nourishment well, but disliked being spoken to, his temperature was just over 99, and his general condition was satisfactory. He made a steady and uninterrupted recovery, the highest temperature recorded being 99.2. He continued mentally dull for some days, however, and complained of a general pain in the head, which gradually wore off, and he was discharged, quite well, mentally and bodily, on the 9th of August.

CASE 2—Compound depressed fracture of the frontal bone, removal of the fragments, recovery.

This was an interesting case from the point of view of its causation. A gentleman was playing Golf on the maidan, and, according to his own account, this is what happened—"When playing Golf on the Calcutta links, on the 18th June, I threw one of my iron clubs aside, and it unfortunately flew in the direction of one of the caddies, striking him with the iron end on the forehead." The patient was brought to the hospital by his involuntary assailant, and was attended to by the Assistant Surgeon, who found the boy quite conscious, there was very little bleeding, but a considerable amount of pain. As examination detected a depressed fracture of the frontal bone, the patient was put under chloroform, and the parts having been thoroughly purified, the external wound was enlarged, and two pieces of detached bone removed, the fracture was limited to the external plate. A horse hair drain was put in, the lips of the wound were brought together, and a dressing of salicylic wool applied.

The patient did very well, the wound healing quickly and thoroughly, he had a little irregular fever for a few days, the temperature reaching 101.4 on one occasion, but he was practically well at the end of the week.

CASE 3—Malignant stricture of the rectum, inguinal colotomy, recovery.

When inspecting the North Suburban Hospital, Cossipur, in January, 1901, I saw a young female, aged about 20, who had been an inpatient for about five months, suffering from "piles," but had not been improved by treatment. I ascertained that she still passed a good

deal of sanguineous mucus, and suffered great pain each time the bowels acted. I made a digital examination, and about an inch and a half from the anus came upon a resistant mass almost blocking the bowel, the tip of the finger could feel, but could not enter, the narrow channel that existed beyond, and the mass could be felt ulcerated all round.

I was unable to detect enlargement of any of the glands, there was no history or suspicion of syphilis (the patient was married, and her husband was with her), and she had had good health till she began to suffer from pain in the rectum, with the passage of stools containing blood and mucus, a year previously.

During her stay in the Cossipur hospital she had been under specific treatment, but without any benefit, I therefore proposed that she should come to my hospital at Bhowanipur, and as she consented she was brought over on the following day.

The patient was kept in bed for two days, during which her bowels were moved every two hours, the motions being passed with great pain and straining, and consisting of blood stained mucus. The woman was greatly debilitated, being worn out by the constant pain and suffering, and begged me to do something for her relief, so I decided to perform a left inguinal colotomy in two stages. The nature of the operation was explained to the patient, and she agreed to it without demur.

On the morning of the 24th of January, assisted by the Resident Surgeon, Babu Hari Pada Mukerjee, I proceeded to operate, the patient having been carefully prepared beforehand.

An incision two and a half inches in length was made from a point just external to the line of the deep epigastric artery upwards and outwards parallel to Poupart's ligament, and an inch and a half above it. This was carried down to the peritoneum, on incising which the small intestine presented and was returned, the finger was then inserted in search of the colon, and on three occasions brought up small bowel, the fourth attempt however was successful, the colon being found deep and near the spine. The coil was pulled out as far as it would come, the lower end being pushed back again till a good sized knuckle remained out with its mesentery intact. I then passed an anchoring suture through the skin of the lower lip of the wound, the mesentery, the skin of the upper lip and back again in the reverse order, tying the free ends of the suture together. This secured the knuckle of bowel, preventing it from slipping back into the abdominal cavity, and I then proceeded to attach the skin and peritoneum on each side to the serous coat of the bowel with three points of suture. Iodoform was dusted on the lips of the wound, over which was placed a piece of thin gutta percha tissue, and a dressing of salicylic wool, held in position with a bandage, was applied. It is a matter of importance not to have ordinary dressings in immediate contact with the wound, as lint and other materials of that nature become intimately adherent to the tissues of the wound and are removed with great difficulty.

The patient was very well after the operation and made no complaint of pain, I opened the bowel on the fifth day, giving exit to a large amount of solid faecal matter, and then cut away all the bowel that projected above the wound, this was a painless proceeding, being done without the administration of an anesthetic, but there was free hæmorrhage from the numerous vessels that were divided, and a good many had to be ligatured.

The patient experienced great relief, as from this time onward, all the fæces passed through the artificial anus, and no longer irritated the ulcerated surface, there was a good spur below, which effectually prevented the passage of any fæces into the lower orifice, and from the beginning the patient had complete control over the artificial anus. The opening was covered with a pad, on removing which, twice daily, the bowel

emptied itself, so that the patient's life was not rendered miserable by the constant draining away of the intestinal contents, an occurrence which not infrequently happens after this operation, and is one of the chief objections to its performance.

The patient rapidly improved in her general health, she remained free from pain, her appetites soon returned, and her weight increased steadily, so that she was quite plump in about three months, during which period there were no untoward symptoms of any kind, and she was ultimately discharged perfectly well, the artificial anus occasioning very little, if any, trouble.

I have received regular accounts of the patient at short intervals, and hear that the state of her health continues perfectly satisfactory, and she is very pleased with the result of the operation, before her discharge from the hospital, I examined her rectum, and found that the local condition had improved considerably, there was much less pain, and only a very slight discharge.

CASE 4—Suppurative arthritis of the right knee-joint, incision and drainage, cure.

Chun Kahar, aged 55, was admitted into the hospital with swelling and pain of the right knee-joint. The patient said that he had been ill for more than three weeks, and that the swelling had come on spontaneously, there being no history of any kind of traumatism, he had never suffered from rheumatism, there was no admission of a previous attack of gonorrhoea. The joint was swollen, hot and painful, the skin over it was red and cedematous, and the patient lay with the limb slightly flexed and resting on its outer side. There were irregular exacerbations of fever followed by exhausting sweats, the patient was weak and low, worn out by pain and fever, so I decided to lay open the joint at once. The patient was accordingly placed on the table, and chloroform having been administered, and the joint purified, I made two long vertical incisions, one on each side of the patella, laying the joint freely open, and giving exit to about four ounces of pus mixed with synovia. The cavity was then irrigated with warm boracic lotion and two medium sized drainage tubes were put in, the wound was dressed with iodoform and sublimate gauze, the limb being put up on a straight back splint.

The patient made a slow but complete recovery, there was a considerable amount of discharge at first, but it gradually decreased in quantity, and the tubes were removed at the end of three weeks, the man being discharged six weeks after operation with a stiff joint, but perfectly well otherwise.

FATAL INJURY OF THE LARGE INTESTINE

By J. T. CALVERT, M.B. (LOND.), D.P.H. (CAMB.),

MAJOR, I.M.S.,

Civil Surgeon, Cuttack

THE following case is related on account of its medico-legal interest.—

Chhedi, Hindu, *æt* 37, a municipal mehter, was fond of wrestling and used to engage in this practice almost every day. He was of medium height and fair muscular development. He suffered from double incomplete inguinal hernia of considerable size. At 10 A.M., on 5th July 1901, when wrestling with another mehter, whom he threw, he fell with his left groin on the bent knee of his opponent. Immediately afterwards he complained of severe abdominal pain. He walked home without assistance—a distance of half a mile—and then vomited and passed a motion. Obtaining no relief to his pain, he later walked, again without assistance, to the Chittagong hospital, a distance of half a mile, arriving there at 3 P.M. On admission he was suffering from shock, complained of great thirst, and of an acute burning

pain in his abdomen. The abdomen was rigid, tender, and tympanitic, the liver dulness was obliterated. A diagnosis of ruptured intestine was made, and at 4 P.M. abdominal section below the umbilicus was performed. A rent, big enough to admit the tip of the index finger, was found on the free surface of the descending portion of the large intestine. This was closed with Lambert's sutures, and the peritoneal cavity, which contained such a large quantity of fluid feces, portion of undigested *dál*, and free air, as to give rise on first incising the peritoneum, to the impression that the bowel had been opened by mistake, was repeatedly washed out with hot saline solution. A gauze drain was left in the lower portion of the wound when the latter was closed. He rallied after the operation, but subsequently sank and died at 4.30 A.M., on the following day, a little over eighteen hours after receipt of the injury and twelve hours subsequent to the operation.

On *post mortem* examination the abdominal walls presented no mark of contusion. The peritoneum was found thickened and inflamed, there were a few flakes of lymph and a small quantity of blood-stained fluid in the peritoneal cavity. The wounded portion of gut which turned out to be the upper part of the sigmoid flexure was water tight. The intestines were healthy throughout. In the immediate neighbourhood of the perforating wound were three small ruptures extending through the mucous membrane only, varying in size from $\frac{1}{4}$ " to $\frac{3}{4}$ " in length, and $\frac{1}{8}$ " in width. There was some extravasation of blood around these. The great omentum was much congested. The internal abdominal rings were large, admitting three fingers.

Remarks

It would seem probable that the wounded gut was occupying the left inguinal canal at the time the injury was received, and was crushed against the spine of the pubis. The wound being situated away from the vessels accounts for the slight hæmorrhage which had taken place. The excess of fluid fecal matter in the peritoneal cavity may be explained by the straining due to the action of the bowels which followed the receipt of the injury, and to abdominal massage administered by the patient's friend for the relief of pain. For these notes I am indebted to Assistant-Surgeon Bharat Chunder Dhan of the General Hospital, Chittagong.

CHRONIC VENEREAL SORE

By J. G. MURRAY,

CAPTAIN, I.M.S.

THE following case again raises the question as to the nature of this disease, and whether identical with the disease described by Dr Manson as ulcerating granuloma of the pudenda, a point which has practically been settled by Lieutenant-Colonel Martland in his article on this subject in the *Indian Medical Gazette* of November 1899. The case is also interesting from its very protracted course, and stubborn resistance to all forms of treatment.

The patient, a sepoy, age 45, was admitted into hospital on 3rd February of this year, said at that time to be suffering from primary syphilis. From the records of the case it appears that he had a sore (character not mentioned) on the glans penis followed by a bubo in the left groin, which suppurated and was opened by the

medical officer in charge. The sore on the penis soon healed, but the groin has gone steadily on from bad to worse.

From the groin the disease has gradually spread down the sulcus between the thigh and scrotum into the perineum. In the groin itself the sore has to a certain extent healed up, leaving behind a large amount of cicatricial tissue, here and there in the groove between the thigh and scrotum it is making a feeble attempt to heal, the edges are considerably puckered, and small patches and bridges of epithelium may be seen on the surface, but it is not by any means a healthy action and readily breaks down again. In the perineum, where the disease is at its worst, there is no attempt at healing in fact the ulcer seems to be slowly spreading. There is a large round sore situated in the perineum extending backwards almost to the margin of the anus and forward to the scrotum, the surface is depressed, smooth devoid of granulations and of a greyish colour, the discharge is thin and watery, and the edges are raised, abrupt and fairly firm, except at one part, where the ulcer is slowly spreading.

There is absolutely no pain and no constitutional disturbance, the patient himself being in excellent health and well nourished.

Although of venereal origin, there can be little doubt from the history of this case and his present condition that we have not a syphilitic lesion to deal with here, for, firstly, there have been absolutely no signs of constitutional syphilis, in fact it seems doubtful if the original sore was syphilitic at all and secondly, treatment with mercury and potassium iodide has had no effect whatever on the disease present.

I may be wrong in my diagnosis, and my chief object in describing this case is to draw attention to it and perhaps obtain an opinion as to the correctness of my diagnosis or otherwise.

ON THE STERILIZATION OF OPERATOR'S HANDS AND SITE OF OPERATION

By W. J. WANLESS M.D.

Miraj, Western India

SINCE rubber gloves are either out of the question for most Indian surgeons, first because of their expensiveness, and second because of the difficulty in preserving them, as of all rubber goods in this climate, it behoves the operator to secure the best possible accessions of his hands. The following method will, I believe, be found to give not only good results, but is at the same time simple of application and easy on the hands. It combines the use of about the three best known antiseptics—chlorine, bichloride of mercury and formalin. Equally important with the antiseptics is the free use of a fibre brush, green soap, nail cleaners and trimmers. For the sake of exactness a clock should be used and each step accurately timed.

1 Clean the nails with nail cleaner.

2 Scrub for three minutes, using force and paying particular attention to the nails, palms, and webs of the fingers. Soft soap, or tincture of soap, and running sterile water should be used. The best brush is a cheap vegetable fibre brush, which can be thrown away or sterilized by boiling for five minutes and storing in 1 in 500 bichloride solution.

3 Again clean the nails and trim, a large straight bone-cutting forceps makes an excellent nail trimmer.

4 Scrub again for three minutes, the scrubbing should extend to and above the elbows.

5 Having rinsed the hands and arms apply chloride of lime and carbonate of soda for two minutes. The chloride of lime should be kept in a wide mouth glass-stoppered bottle large enough to admit the hand. A piece of washing soda, the size of a hickory nut, and a handful of the lime are taken together, moistened with the running water to the consistency of thick cream. The lime is rubbed vigorously into the hands and arms, using the piece of soda with the lime as one would soap. The soda aids in the giving up of nascent chlorine.

The lime should be incorporated under the finger nails (using the opposite nails for this purpose), and rubbed in nicely around the base of the nails.

If the chloride of lime is fresh, it will smell strongly of chlorine and will impart a warm feeling to the hands and arms. At first if used more than twice a day the lime may set up an eczematous rash, but the hands soon become accustomed to the lime and it has the great advantage of not hardening the skin. The process of applying the lime should not exceed two minutes, otherwise the result above mentioned may arise from a single application.

6 The lime having been rinsed off with running sterile water, brush the hands and arms for two minutes in an alcoholic solution of bichloride of mercury, 1 in 500, 50 per cent alcohol in water. The 50 per cent alcohol has proven to be a better antiseptic for skin cleansing than pure alcohol. This solution may be returned to a bottle and used repeatedly where economy is desirable.

7 Immerse the hands for one minute in a solution of formalin containing $2\frac{1}{2}$ drachms of formaldehyde (which contains 40 per cent formalin) to 30 ounces of water.

8 Rinse the hands with normal salt solution, about 1 in 90 of sodium chloride in water. The hands are now ready for work.

It will be seen that in addition to the cleaning and trimming of the nails, just twelve minutes are consumed in the process of preparing the hands, which is not too much time for the purpose if thoroughness is desired.

About three years ago Dr. Robt. Wen, of New York, made bacteriological tests of scrapings from under the finger nails after the use of chloride of lime, in the manner above described. He found 48 out of 50 of the tubes showed no growth of bacteria. One thing should be said about the chloride of lime, and that is that, although it is inexpensive, it is difficult to secure, in this country, lime from which a large part of the chlorine has not escaped. For the Miraj Hospital we buy the lime in England in

bulk, and immediately on arrival have it transferred to hermetically sealed stone jars containing from 5 to 10 lbs each. The lime eats through the ordinary tin-lined retainers, and the above plan enables us to keep it indefinitely free from moisture and of efficient strength.

The additional use of the alcoholic solution of the bichloride of mercury and formalin ought to make the accesses of the hands practically perfect as practice with it seems to prove that it does.

THE SITE OF OPERATION

A modification of the above may be employed. The lime may be applied to any part of the body excepting the face. On the scrotum, however, it should not be allowed to remain for more than one minute, and it should not be applied to raw surfaces.

1. The patient having been given a general bath (where this is possible) and the nurse or assistant having prepared his hands as above, omitting the bichloride and formalin, scrub the parts with a sterile brush, warm water and green soft soap for three minutes and shave and wash off with bichloride of mercury 1 in 1,000 warm solution.

2. Apply for one to three hours a poultice of soft soap.

3. Scrub again with soap and water for two minutes and wash off with bichloride solution 1 in 1,000.

4. Apply a wet dressing of 1 in 1,000 bichloride to be kept on over night, or, if possible, for 24 hours, re-wetting it once during this time.

5. The patient having been put on the operation table, while going under the anæsthetic or immediately he is under, remove the dressings, only sterile hands being allowed to touch the parts, and scrub again for one minute with soft soap and warm water and rinse off with bichloride of mercury 1 in 1,000.

6. Now brush the part briskly, briefly and successively with towels wet with the following solutions—

(1) Bichloride of mercury 1 in 500 alcoholic (50 per cent) solution,

(2) Formaldehyde 1 in 40 in water,

(3) Normal salt solution.

7. Surround with sterile towels or sheets.

8. For emergency operations—The parts having been cleaned and shaved as above, *chloride of lime* may be applied for two minutes instead of the soap poultice and wet bichloride dressing, the subsequent steps being carried out as suggested.

INTRA-PERITONEAL RUPTURE OF OVARIAN CYSTS

By KEDARNATH DAS, M.D.,

Teacher of Midwifery, Campbell Medical School, Calcutta

THE following case came under my observation so soon after Dr Haultain's paper on the

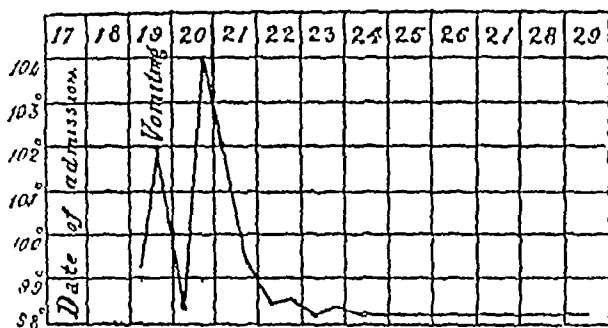
above subject before the Edinburgh Obstetrical Society, that I take an opportunity of recording it.

Kukri, *et al* 32 a Bengali woman, of rather short stature, was admitted in the Campbell Hospital, Calcutta, on the 22nd February, 1901, with a large abdominal swelling. Eighteen months ago she noticed, for the first time, that her abdomen was getting large, and in two months had become enormously distended. She placed herself under Kabiraji treatment and was said to have been cured by medicines only (?). Three months later the abdomen began to enlarge again, and in six weeks was greatly distended. This time too she was said to have been cured (?) by medicinal treatment. She stated that under above treatment, she was freely purged on both occasions. About four months afterwards her abdomen began to grow bigger for the third time, but on this occasion Kabiraji treatment did her no good, and she got herself admitted in the Campbell Hospital on 17th September 1900, when the following conditions were noted: Abdomen very tense and shining. Distension irregular, there being a shallow depression, a little above umbilicus. Measurements—around umbilicus 37½", 2" below umbilicus 36½", 3" above umbilicus 38", ensiform cartilage to umbilicus 10", umbilicus to pubes, 8", R and L A.S.S. to umbilicus, 9". Dulness all over abdomen, oedema of abdominal parietes. V.E. revealed nothing in the pelvis. General condition fair. No albumen in urine. 2 para. Amenorrhœa for four years.

It was apparent from physical examination that the fluid in the abdomen was encysted and not free in the peritoneal cavity, but the history of two previous cures by medicinal treatment made me dubious about the diagnosis. An exploratory celiotomy was proposed, to which she would not give her consent. On the afternoon of the 19th her temperature went up to 102° F with vomiting of bile stained fluid (only once). Next morning the temperature came down to 98.4° F, but in the evening it went up to 104° F. The temperature did not rise any more, but during the next three days she felt great uneasiness with insomnia, but no actual pain or much tenderness in the abdomen. Bowels were kept open by salines. On the 24th the abdomen was found to be "distinctly less distended." On 7th October, 1900, her abdomen was almost flat and tympanitic all over except the lower part. Patient went home relieved, but came back again on 22nd February, 1901, with enormous distension of abdomen, about 4½ months after her discharge from the hospital. Her condition now was almost the same as noted on the last occasion (*i.e.*, on 17th September, 1900). She, however, consented to an operation this time, and after a few days' rest and attention to bowels, abdominal celiotomy was performed on 2nd March 1901. The cyst wall was adherent to the parietes, but the cyst could be easily identified and separated by a sweep of the finger around the incision breaking the adhesions. After the fluid was evacuated, the collapsed cyst could not be drawn out through the wound owing to almost universal adhesions of the cyst wall to the parietes. The whole hand had to be introduced to break these adhesions, which were soft. No intestinal or omental adhesions. The fluid evacuated was gelatinous (like white of egg), but it flowed pretty freely through the big sized Tait's trocar. It measured 280 ounces. There were many small secondary cysts. Recovery uninterupted.

It was evident from the history that the cyst ruptured thrice within a period of eighteen months, with subsequent absorption of the fluid on each occasion. The third rupture took place while she was in hospital, and the clinical features of the process could be carefully noted. The accompanying chart almost certainly shows that the cyst ruptured on the 19th. The subsequent

peritoneal irritation lasted for two days, after which absorption of the fluid commenced



On the 24th, absorption so far proceeded that there was a distinct diminution in the size of the abdomen. In the course of the next twelve days almost the whole of the fluid got absorbed (i.e., about 280 ounces in 15 days). The absence of any local symptoms evidently due to the innocuousness of the cyst contents, is worthy of note. The cause of the rupture appears to be secondary softening of the cyst wall.

SURGICAL CASES TREATED IN THE BERHAMPUR HOSPITAL

By AMBICA CHARAN DATTA,

ASSISTANT SURGEON

WITH REMARKS BY J. H. TULL WALSH

MAJOR, I.M.S.

URINARY CYST IN THE SCROTUM

Case I—The patient, named Srinandan, a child of four years, was admitted into the hospital on the 7th of February 1901. His father gave the following history—

Six months before admission the child complained of difficulty in micturition, which lasted for about ten hours and was afterwards relieved by extraction of a small bit of stone from the meatus. On the day following the child had a big swelling in the scrotum, which required to be pressed every time the patient had to pass water, the swelling went down when micturition was complete, but got big again when urine accumulated. When the child came to the hospital the scrotal swelling was about the size of a hen's egg, soft and fluctuating. The penis was almost covered up by a thin fold of skin, superficial veins very much enlarged and tortuous, urination extremely difficult and painful. Catheter No. 7 went all right till it reached the bulbous portion, where it seemed to meet with some obstruction, but when the end was tilted round towards the perineum urine came out in a gush, and the swelling in the scrotum diminished in size and the tip of the catheter was easily felt underneath the scrotal skin. When the swelling was emptied catheter could be taken out and inserted into the bladder with the result that urine came out from there also. Thus no doubt could be entertained that there

were two sacs for accumulation of urine, one being the original bladder, and the other the false sac in the scrotum, communicating with each other by a small slit admitting the point of a No. 7 silver catheter.

The patient was kept under observation for a few days and the operation was decided upon, an incision was made in the media line under chloroform and the sac carefully dissected out, when it was found to have a broad neck connected with the urethra on all sides, it was then opened in the media line and the interior was found lined with a distinct velvety mucous membrane. The catheter could be felt through a small slit. It went into the bladder easily, the cyst was then excised and the parts sutured and dressed.

The patient remained in the hospital for about 20 days without any complication occurring, the perineal opening was gradually closed up, and when the patient was discharged there was very slight trickling left, urination was otherwise quite normal.

I would now say a few words about the nature of the cyst. It may be simply an enormously dilated urethra doubled upon itself, if we suppose the possibility of a stone jammed against its anterior part while the urethra behind had gradually been distended to assume the size of the tumour described above, but to do this it must be the matter of some days at least to get a tumour of the present size, which the history of the case proves it to be a day's occurrence only, another explanation which appears to be plausible may be offered, it may be that the passage of a rough gravel produced a slit in the floor of the urethra, urine escaped and instead of causing inflammation and suppuration it formed into a cyst with the interior lined by the same sort of mucous membrane as that in the urethra, irritation of the urine giving rise to a rapid proliferation of epithelium.

The case is interesting first because of its extreme rarity, secondly because of the extremely changeable condition of the tumour with symptoms which might lead one to suppose it to be a case of hernia of bladder with patent urethra and ureters—a circumstance which the anatomical condition of the part proves to be impossible.

Major Walsh was kindly present during the operation and to him I am very greatly indebted for guiding me in its various steps.

[The cause of the condition above described was no doubt the injury produced by the calculus during its passage along the urethra. The urine passed directly from the bladder into the cyst and every effort on the child's part tended to distend the cyst. The scrotal wound had not quite healed when the father removed the child from the hospital, but a cure is certain, as the child could at the time pass water by the natural channel.—J. H. T. W.]

A CASE OF FRACTURE OF THE STERNUM

Case II—Having read in an issue of the *Lancet* for March 1901 a case of fracture of the sternum, I feel inclined to publish my case also, though there is some difference between the two. The patient named Atal Behary, a Hindu male, aged 30, was admitted on 30th of January 1901. The history ran as follows—

The man fell down from a tree about 20 feet high on his buttocks, he could not get up and complained of pain in the loins. At the same time breathing was difficult. When he came to the hospital breathing was hurried and respiratory movements painful, there was a great bulging over the sternum. A transverse fracture could be detected at the line of junction of the third costal cartilages the fragments moving upon one another during respiration, crepitus distinctly audible with stethoscope. Heart and lungs were all right.

The case is important first because of its rarity, secondly because the fracture was due to indirect violence. The man fell on his buttocks with a great deal of force, and in doing so the upper part of the body, consisting of the head, neck and upper part of the chest was pressed upon as it were on the lower part at an angle, thus the bone gave way where the pressure was greatest. The patient remained in the hospital for three weeks, he was treated only by the application of a pad over the fracture and a tight bandage round the chest, for first few days he was given morphia twice a day to relieve pain and secure rest. The diet consisted of milk at first, then full diet was regularly followed.

[Beyond drawing attention to the physical nature of this accident no remarks seem necessary. The infalling took a direction downwards and forwards. As the buttocks struck the ground the upper part of the body was still moving, and as the result of 'inertia' a fracture of the sternum resulted.—J. H. T. W.]

A RARE COMPLICATION DURING LITHOLAPAXY

By W. B. LANE,
MAJOR, I.M.S.,

Civil Surgeon, Montgomery

A. D., Mohammedan, aged 6 years, admitted on 11th July 1900 for stone in bladder. On 12th July the patient was put under chloroform and litholapaxy commenced in the usual way with No. 6 lithotrite. After crushing for about half an hour it was noticed that the male blade worked rather stiffly but this not being considered in any way serious, the operation was proceeded with. Shortly after, when an attempt was made to push the male blade home, it was found impossible, and the blades remained open to the extent of an inch. No force that the Assistant-Surgeon

Rebello or I could exert made any difference and it was not known what had happened. The only thing remained to be done was to open the bladder as in a suprapubic operation and cut down on the lithotrite which was felt through the wound. This was done and the lithotrite pushed through the wound. The grooves in the stem of the female blade were found filled with detritus of stone and picked out with a sharp probe, after which the blades were pushed together and the instrument withdrawn. As many fragments of stones as could be removed were extracted with a forceps and the bladder washed out as far as possible, but as the child had been under chloroform for a long time and was shewing signs of collapse, some small fragments were left behind and the operation completed by closing the bladder and abdominal wound by catgut sutures. The child was kept under the influence of opium.

The temperature did not rise beyond 99.8, the catgut sutures gave way, and up till July 23rd urine came through the abdominal wound, after which the wound quickly healed, all urine passing per urethram. The child left the hospital on 8th August quite well.

I am much indebted to Assistant-Surgeon Rebello for his help during the operation and for the after-treatment of the case which was entirely in his hands and to whom the good recovery was in a great measure due.

I am not aware if the above accident has ever happened before, but it must be rare, and therefore, I think, suitable to be put on record.

Benefit of Intrasplenic Injections in Chronic Malaria. J. L. Castro Gutierrez.—The writer relates several cases of chronic malaria with hypertrophied spleen, absolutely rebellious to quinin or any medicinal treatment. He injected directly into the spleen a Pravaz syringe of a mixture of 20 cc of malate of iron and six drops Fowler's solution, in water. The evening of the same day an acute malarial attack occurred, with fever at 40°C. Subcutaneous injections of quinin were made repeatedly. The third day the intrasplenic injection was repeated, but was not followed by any reaction, and the patient's further recovery was rapid. The experience was repeated in every case. The malaria parasites had probably ensconced themselves in the spleen, and quinin did not reach them. The intrasplenic injection roused them up and forced them into the general circulation where the quinin administered immediately afterwards soon destroyed them. The author asserts, therefore, that the technique should be first the intrasplenic injection, and then large subcutaneous doses of quinin, as soon as the acute attack appears.—[*Chronica Medical (Lima)*]

THE
Indian Medical Gazette
 NOVEMBER, 1901

THE REORGANISATION OF THE R A M C

THE report of the Committee appointed by the War Office to consider the reorganisation of the Royal Army Medical Corps has just reached us as this issue of the *Indian Medical Gazette* is going through the press. We are consequently obliged to give it a more hurried consideration than its importance demands. It is not necessary for us to reprint the report in full, as all interested will have read it in the home medical papers. The chief points in the recommendations of Mr Brodrick's Committee are as follows: (1) the appointment of an Advisory Board of Supervision, (2) the alteration in the method of examination and the apparent abolition of the Army Medical School at Netley, (3) the institution of no less than three examinations for promotion between the 3rd and 20th years of service, (4) the provision of retirement at the end of three years for those who are tired of the service and its ways, and the formation of a small reserve of such officers, (5) a half-hearted return to the regimental system, (6) arrangements for professional instruction during service, (7) provision of "specialist" appointments, (8) brevet promotion, (9) change pay, (10) a special corps of officers for the medical charge of the Household Regiments, (11) retired pay as before and gratuities after 9 years and after 18 years' service, (12) and last, but not least, increased pay all round.

We propose very briefly to comment upon some of these changes. As regards the Board, nothing can be said till its constitution is made known, much, very much, will depend upon it, and upon the scheme which this Board is ordered to prepare for the "expansion" of the service, and provision for its needs in peace and war. The inspections of this Board are to be "without notice," a sort of inquisition which is not customary in other departments of the Army nor in Civil life, and we think quite unnecessary in this case. If the members of the Board cannot see through "eyewash," &c, they are not fit for such a position, moreover, will the secret of these sudden inspections be kept? The new regulations for entrance to the service are not clear

from the Report. Apparently the Board will consider the claims of an applicant, then submit him, if approved, to a "clinical and practical (*sic*) examination" to be defined by the Board. Then the candidate having become a Lieutenant on probation shall go to some place for a two months' course in hygiene and bacteriology, and then three months are to be spent at Aldershot on such overpoweringly important subjects as "stretcher drill," "interior economy," and military law, &c! The candidate's position will depend on the marks gained at the professional examination and at the Aldershot examination. The Committee therefore hug the old delusion that hygiene and bacteriology are only taught in the Army, and that students from the medical schools know naught of them. What about Netley? it seems threatened? The rule allowing House Surgeons to count a year towards service, if so employed, is a good one, how many hundred IMS men would be glad if they could now count that year?

The recommendation about a Lieutenant being attached for duty to a regiment is vague, apparently he will see the minor cases in the regimental lines and send only the more serious cases to the station hospital. Are only Lieutenants to be attached to regiments? and why? Then comes the rule of an optional retirement after three years' service, with a re-engagement in the Reserve for seven years on £25 a year. This is evidently intended to create a War Reserve of medical men, and we shall be curious to know how it will work.

Then comes the most important portion of the Report, *viz*, the arrangements "for gaining further professional knowledge." It appears that the medical officer is to gain this knowledge at selected civil hospitals, "in addition to his other duties," not a very liberal or satisfactory arrangement. Moreover, the Report is silent as to who is to pay for this hospital attendance. Then comes examination No 2, (truly these *chevaux de frise* of examinations make, as the papers have said the lot of a medical officer not unlike that of a Chinese mandarin,) with the very revolutionary attempt to promote merit, by giving acceleration of promotion according to the percentage of marks earned. Truly it appears that the Committee have a very beautiful and sublime faith in examinations. Not only must a man pass these examinations, but he gets accelerated promotion if he answers correctly the questions

of the examiners How eagerly men will await and note down the *ipsissima verba* of the examiner who has such power in his hand Does the Committee think that the man who has crammed up and best answers the questions will be the best medical officer? If so, they resemble those satirised by the poet, those who

"strive

To gain a pedant and to loose a Clive"

More examinations for the majority, but here one redeeming feature is introduced, *viz*, that a candidate may in addition take up a speciality, though his knowledge of this speciality only will gain him at most 100 marks, or the same as given for the subject of "military law"! The Lieutenant-Colonel has his examination to pass also, but it is more practical, that is, it is on matters of hospital discipline and sanitation which he cannot fail to understand

We must now pass on to the question of pay Here we perceive a certain liberality The rates are certainly higher than before, and begin on £323-10-0 a year, rising after three years, after seven years, and after ten years up to £477-15-2 A Major's pay begins on £587-12-10, rising to £632-12-10 at 15 years' service, a Lieutenant-Colonel's pay is £713-15-4, and, if "selected," £804-15-4 A Colonel gets £953-10-10, and a Surgeon-General £1,500 instead of £1,300 (as before), and the Director-General's pay is raised to £2,000 a year from £1,500.

Not is this all a Lieutenant-Colonel or a Major is usually in charge of a hospital containing 200 or 300 beds, and he gets charge allowance of 7s 6d, or 10s a day in addition, and in proportionate scale for smaller hospitals

This opens to us the great and important question of the effect these new rules may have upon the Indian Medical Service We need say nothing now except on this pay question, and as these new rates of pay are to be proportionately increased for R A M C officers serving in India, it comes as a necessity that the scale of pay in all departments of the Indian Medical Service must be increased, if men are to accept whole life foreign service in India

THE SEASONAL PREVALENCE OF ANOPHELES AND MALARIA IN CALCUTTA

It must now be generally admitted that a knowledge of the causes of the prevalence of

malarial fever in any locality must largely depend upon the extent of our knowledge of the life-habits of the malaria-bearing mosquitos of the anopheles species Our acquaintance with this subject is daily increasing, and our columns within the past year have chronicled many additions to what is known of the life-history of these flies

In our last number we published an article by Captain William Glen Liston, I M S, of the Bombay Research Laboratory, on the habits and prevalences of anopheles in Ellichpur Cantonment, and we now propose to give a brief *résumé* of a similar article in *The Journal of Hygiene* (October, 1901) by Captain Leonard Rogers, M D, I M S, the Officiating Professor of Pathology and Bacteriology in the Calcutta Medical College

It has long been known that differences in the physical characters of various localities were in some way connected with a greater or lesser prevalence of malarial fever, and India is such a vast country and contains so many varieties of soil and climate that what is true for one portion may not at all apply to another Hence the importance of such local investigations as those of Liston and Rogers

Dr Rogers' paper is concerned entirely with the prevalence of anopheles and malaria in and around the suburbs of Calcutta, and it is probable that these observations may be taken as fairly representative of the conditions that make for malaria in Eastern Bengal generally

It is obvious that mosquito prevalence may be very different in a dry up country station, and in a place like any of the suburbs of Calcutta, where an area containing about 3,000 inhabitants may have an hundred tanks. These tanks are so many, and so much used by the inhabitants that any scheme for filling them up and using larvicides in them may be looked upon as practically impossible It may be remembered that in the earlier announcements on the subject of malaria and mosquitos it was said that the anopheles confined itself to small pools and puddles and did not inhabit tanks The discovery in India that at certain seasons of the year the larvæ most certainly live in tanks as well as in irrigated rice-fields adds therefore much to the difficulties of any scheme for the extermination of these flies

Dr Rogers' article is illustrated by a graphic chart which shows, at a glance, the relative

prevalence of malarial fever (as evidenced in the neighbouring hospitals) and the anopheles in tanks and roadside puddles and ditches. It is shown that there is a marked and sudden rise in the fever-rate three weeks after the onset of the rains in June, and the fever-rate remains high throughout the rainy season and following months up to December. The low-fever rate period is equally distinct, and lasts from the middle of December, through the hot and dry season up till June. That the fever season is thus correctly stated must be within the experience of every one who has lived in Lower Bengal. Dr Rogers, also shows that, in the Presidency Division, the fever curve always rises with each break of a week or more during the monsoon, and the unhealthy years are those in which such breaks are most frequent, quite irrespective of the total amount of the rainfall.

Coming next to the prevalence of anopheles larvæ we are at once struck, on looking at the chart, with the fact that their period of *maximum* prevalence is in the *hot* weather months from March to May, when they can be found in enormous numbers in the tanks, in May no less than two-thirds of all tanks, in an area under regular observation, were found to be infested with anopheles larvæ. On the other hand, in the dry hot season the pools and puddles are dried up. On the onset of the rains the anopheles larvæ were much less readily found, only one-sixth of the tanks being found infested, and though at this time the larvæ again appear in the previously dried up pools, nevertheless the net result is a large decrease in the total number of larvæ. Dr Rogers, moreover, points out that in a break in the rains the small pools rapidly dried up, so that it cannot be said that in the neighbourhood of Calcutta, at least, the increase in the fever-rate is corresponding to an increase in the *total* number of anopheles larvæ.

In August and September no larvæ were found in the tanks, but a certain number existed in pools and drains. The floods of September 1900 in Calcutta so thoroughly scoured the pools and puddles that for the time anopheles larvæ seem entirely to have disappeared, and in October, when the fever curve was at its maximum, the tanks were free from anopheles larvæ, and few remained in the road-side puddles, most of which had soon dried up. In December the larvæ were again found in

the tanks, but in diminished numbers, and they gradually increased as the warmer weather approached.

It would appear then, from these observations, that anopheles larvæ are most abundant in tanks in the minimal fever season, and that they disappear in the rains. A possible explanation of these facts is offered by Dr Rogers in the suggestion that in the dry hot weather the fish lie at the bottom of the tanks, and the larvæ are thus allowed to grow in millions, unharmed and undisturbed by their greatest enemy, the fish. That fish devour enormous quantities of mosquito larvæ is a fact well known to fishermen, and anglers in India will remember the chapter in that delightful book, "*Tank Angling in India*," by Mr H S Thomas, where he gives descriptions of the way in which fish devour mosquito larvæ, and quotes an interesting account of mosquitos and their habits from the pen of Dr William Gilchrist, of the Madras Medical Service, written in 1837, long before the mosquito theory was dreamt of.

At first sight the above observations seem to run counter to general views held on the connection between mosquitos and malaria, and it may be noted that if the disturbing factor of the tanks be eliminated, then the prevalence of anopheles and of the malarial fevers runs *pari passu*. But in Lower Bengal the tanks certainly cannot be ignored, and we must seek elsewhere for an explanation. The truth of the connection between anopheles and malarial fever is too firmly established to be upset by any one series of observations which seem to run counter to it. This is acknowledged by Dr Rogers, who considers that the explanation of what he has observed is to be found in some fact in the so far little known life-history of the anopheles in this climate.

He is inclined to think that the influence of the great heat from March to May is the operative factor, which may act by preventing the majority of the insects, which are hatched in the hot season, from surviving long enough to act as effective carriers of the malarial organism.

The maximal prevalence of fevers in October, at the time of a decrease in the number of anopheles larvæ, is, no doubt, to be accounted for by the steadily increasing number of infected adult flies, which still continue to live in the houses of the inhabitants as long as temperature and other climatic conditions are favourable. The sudden

decline in the fever rate, late in December, closely following a temperature of below 60°F, is reasonably explained by the cold killing many of the mosquitos and driving others to hibernate

It is obvious from the above sketch that Dr Rogers' article is one well deserving of study, we have not space to follow his recommendations towards the prevention of malaria

The article shows clearly the necessity which exists for further continuous study of the life-habits of these noxious insects, and we hope that it will stimulate others to repeat these observations in other climates and places in India

LONDON LETTER

A NEW TUBERCULOSIS COMMISSION

PROFESSOR KOCH's startling pronouncement at the Tuberculosis Congress that human and bovine tuberculosis are not reciprocally communicative, has, as might be expected, raised quite a tempest of discussion. The judgment of competent critics headed by Virchow is adverse to his views, but it is felt that the evidence upon which opinion—*pro* or *con*—rests is insufficient, and that further investigation is requisite to decide the extremely important issue raised by Koch. Accordingly, a Royal Commission has been appointed in this country for the purpose of instituting a thorough inquiry. The members of the Commission are Sir Michael Foster, and Professors G S Woodhead, S H C Martin, J McFadyean, and R W Boyce, whose names are a guarantee of solid, reliable work. The scope of the inquiry is wide and has been defined in the following queries—

1 Whether tuberculosis in animals and man is one and the same,

2 Whether animals and man can be reciprocally infected with it,

3 Under what conditions, if at all, the transmission of the disease from animals to man takes place, and what are the circumstances favourable or unfavourable to such transmission

The Commission is granted every facility regarding the citation of witnesses, the inspection of books and documents, the visitation of places, and the submission of reports. No mention is made of any experiments or laboratory work, unless this is included in the terms, "all other lawful ways and means whatsoever." This step is a wise and necessary one and will probably

lead to the promulgation of authoritative instructions on a matter affecting gravely the public health. Meantime it may be taken for granted that no relaxation of existing precautions regarding the use of tuberculous meat and milk will be permitted, for, apart from the risk of infection, the consumption of diseased food is repugnant to salutary instinct and altogether objectionable

A FRENCH MEDICAL MARTYR

Following the lead of Dr Monson, Dany Commissioner for the State of Colorado, a French physician, Dr Paul Garnault, has addressed to Professor Koch a somewhat theatrical letter in which, while professing himself a disbeliever in Koch's views, he offers himself as a subject of experiment to prove or disprove the amenability of man to infection by bovine tuberculosis. He avers that he is in good health and justifies his undertaking by the assertion that when numbers of men suffer death in war for patriotism it is not unfitting or singular that one man should encounter the risk of fatal infection for the sake of humanity. It is reported that Koch has encouraged Garnault in his venture. Indeed it would go far to upset his declared conviction of human unsusceptibility to contract the tuberculosis of cattle, were he to dissuade him from undergoing his proposed ordeal. Dr Garnault will, therefore, treat himself for a prolonged period with frequent inoculations with the bovine bacillus and copious libations of milk drawn from tuberculous udders. Should the result be positive, it will contribute to the overthrow of Koch's declaration, if negative, it will contribute to its support, but in either case the experiment will not be conclusive, for a single instance can never in such matters establish a doctrine while the conditions affecting the issue are so complex. The contingency remains in any solitary instance of infection of access otherwise than through the experimental inoculation, and, on the other hand, the personal element of susceptibility or resistance has to be taken into account, and it is impossible in the present state of science to ascertain the existence or estimate the value of this element in any person, organ or tissue. The French physician hopes, if infected, to be able to extirpate the disease. Let us hope that if contracted it will be sufficiently localised to permit of such a procedure

THE PREVENTION OF MALARIA

A Commission piloted by Major Ross has proceeded to Sierra Leone for the purpose of initiating and watching measures for suppressing malarious fever, through the destruction of the anopheles mosquito. For this purpose the plan of campaign is directed not much against the insect itself as against the conditions under which it is known to propagate and flourish. The cardinal principle of attack is the abolition of pools and puddles, and this is being attempted by means of systematic drainage. At the same time quinine is being liberally employed for the destruction of the malaria parasite *in corpore humano*, and nettings used to exclude the peccant mosquito from human habitations after the manner which has proved so successful in Italy. It is a very significant and encouraging fact that nature by securing water-courses and reservoirs with rain and inundation accomplishes the diminution of malarial disease. This is a very familiar experience in India, and from a communication recently received from a correspondent at Sierra Leone, I learn that a fall of some 50 inches in July last resulted in the disappearance of malaria in that very malarious locality. It appears there that the new doctrine regarding the generation and dissemination of malaria simply affirms and accentuates the value of the old remedies of drainage and quinine. While these measures are being carried out at Sierra Leone similar efforts are being made in the neighbouring settlement of Lagos. Lagos is fortunate in having for its Governor a very able man and scientific physician in Sir William Macgregor, who has taken up the new malaria doctrines and prophylactics with enthusiasm and energy. The undertakings which are being prosecuted on the West Coast of Africa are attracting universal attention, and it is comforting to know that whatever be the outcome of them, we shall not be kept in ignorance there-aneant.

THE LATE J H B HALLEN

I observed with regret not long ago a notification of the death of Veterinary-Lieutenant-Colonel J H B Hallen, who, during a long and meritorious service, did much to further our knowledge regarding the diseases of stock equine and bovine in India and to improve the breed of both horses and cattle. I was associated with Hallen on the Cattle Plague Commission appointed

by Lord Mayo in 1870, which discovered the extensive and habitual prevalence of rinderpest in India. He was a man of considerable ability, keen observation, sound judgment and unwearying diligence. He was also suave and conciliatory in manner, and persistent in the advocacy of any measure or scheme which promised to raise the status of his department, advance veterinary service and enhance the comfort and economical value of domestic animals. He was a strong promoter of veterinary education in India and was largely instrumental in founding veterinary schools which constitute one of the best results of the labours of the Commission over which he presided. He held a diploma in medicine, and acted for a time as principal and professor of the Edinburgh Veterinary College. He was imbued with strong scientific instincts, and was always ready to encourage good work done by subordinates in his department. The veterinary service in India occupies at the present time a very creditable and useful position, and this is largely due to Hallen's efforts and work.

K Mc L

6th September 1901

Current Topics.

THE TELEGRAPH DEPARTMENT JUBILEE
AND THE I M S

At first sight it might puzzle many to find any connection between the celebration of the 50th year of the Indian Telegraph Department and the Indian Medical Service. But a glance at the history of the remarkable progress made by that well-managed Department shows that it had for its first Director-General, Sir Wm Brooke O'Shaughnessy, M.D., who entered the Bengal Medical Service of the H E I Company as an Assistant-Surgeon on 8th August 1833.

The career of the distinguished founder of the Telegraph Department in India may be here briefly sketched.

William Brooke O'Shaughnessy (afterwards by royal license O'Shaughnessy-Brooke) was born at Limerick in 1809, the same year as several other great men of the 19th Century, he was educated at Edinburgh University, of which he was an M.D., 1830. He was appointed an Assistant-Surgeon in the Bengal Medical Service in 1833, and was for some time physician to Sir Charles Theophilus, afterwards Lord Metcalfe. In 1848, after fifteen years' service, he became Surgeon and Surgeon-Major in 1861. He had been for many years Professor of Chemistry

in the Medical College, Calcutta, and wrote largely on chemical and medical subjects, but devoted his attention chiefly to the electric telegraph. Even so early as 1839 he published in India a pamphlet on the subject, but little attention was paid to his views till the advent of the "great proconsul," Lord Dalhousie, in 1847. With the insight which distinguished the greatest of our Governors-General, Lord Dalhousie saw and believed in the future of electricity, and Dr O'Shaughnessy was employed by him to lay down in Calcutta an experimental line of telegraphs. Its success was so great that the Directors in 1852 sanctioned the immediate construction of lines of telegraphs connecting Calcutta, Agra, Bombay, Peshawar and Madras. O'Shaughnessy was appointed Director-General of Telegraphs and went to England to collect men and materials. He returned to India and commenced work in November 1853, and such was his energy that the line between Calcutta and Agra, a distance of 800 miles, was in full working by March 1854, and in February 1855, before the outbreak of the Mutiny which was to demonstrate its great value, telegraph lines had been completed for over 3,000 miles connecting Calcutta directly with Agra, Bombay, and Madras.

O'Shaughnessy was knighted for his services in November 1856, and after five years' further work in India, he retired from the service in 1861. He had early in life been elected a Fellow of the Royal Society. He died at Southsea on 10th January 1889.

O'Shaughnessy was the author of numerous pamphlets and contributions to the Royal Society and other scientific bodies. Among his more purely medical works may be mentioned his "Manual of Chemistry," Calcutta, 1841, "The Bengal Dispensatory," London, 1842, "The Bengal Pharmacopœia," Calcutta, 1844, and a translation of Lugol's "Essay on the Effects of Iodine in Scrofulous Diseases."

O'Shaughnessy has every right to be included among the list of Indian Medical Service officers who have done important political services to the Empire. Of the many difficulties he triumphed over it is not here necessary to speak, the lack of trained workers, the absence of bridges across wide rivers, and of roads through dense jungles must have sorely tried him, but the main lines of the great network of telegraphs were just complete when the outbreak of the Mutiny proved to Government the vital importance of this new and rapid means of communication, and the words of John Lawrence "the telegraph saved India" fitly sum up the great services rendered to civilisation by Surgeon-Major William O'Shaughnessy Brooke, of the Bengal Medical Service.

For the above sketch of his life and work, we are indebted to the *Dictionary of National Biography*, Vol XLII, p 310.

PROFESSOR WRIGHT ON THE EFFECTS OF ANTI-TYPHOID INOCULATIONS

THE following summary of Professor A E Wright's very important paper (*Lancet*, 14th September, 1901) on the changes affected by anti-typhoid inoculation in the bactericidal powers of the blood, and on the probable significance of these changes, are given in the writer's own words —

"It may serve a useful purpose, before concluding, briefly to summarise the facts ascertained in the course of the present investigation and to indicate certain important practical conclusions which would appear to follow from these facts, assuming always the significance of the alterations in bactericidal power which supervene upon inoculation to have been rightly interpreted."

With regard to the sequence of events after an anti-typhoid inoculation it has been shown —

1 That where the quantum of anti-typhoid vaccine employed produces the familiar well marked constitutional symptoms a decrease in the bactericidal power of the blood and a correspondingly increased susceptibility to typhoid infection may supervene in the period immediately subsequent to inoculation. Upon this negative phase of increased susceptibility there may, however, be expected to succeed, probably within a period of three weeks or less, a phase of increased bactericidal power and a greater resistance to typhoid.

2 That when the quantum of anti-typhoid vaccine employed produces very severe constitutional symptoms, a negative phase of increased susceptibility will be produced, which—and the same would appear to hold true also in case of a negative phase supervening upon an actual attack of typhoid fever—may never be followed up by a positive phase of increased resistance.

3 That when the quantum of anti-typhoid vaccine employed is reduced to the point at which marked constitutional disturbance is avoided a positive phase of increased resistance may be expected to supervene without the intervention of any negative phase, and in many cases within 24 hours.

The following practical conclusions would appear to follow from the data set forth above.

Practical conclusions—1 The employment in primary inoculation of large doses of vaccine—meaning thereby doses sufficient to give rise to very severe constitutional symptoms—would appear to be always inadvisable, while it would probably be associated with danger in cases where inoculation is resorted to in the actual presence of a typhoid epidemic.

2 The employment of moderate doses of vaccine—meaning thereby doses sufficient to give rise to marked but not unduly severe constitutional symptoms—would appear to be inadvisable when making primary inoculations in the actual presence of a typhoid epidemic. On the contrary, such doses would seem to be appropriately employed where an interval of several weeks is to elapse before exposure to infection and where there are difficulties in the way of carrying out two successive inoculations.

3 The employment of small doses of vaccine—meaning thereby doses which produce only a slight constitutional disturbance—would appear to be the only appropriate form of inoculation in the actual presence of typhoid infection. It would seem to be also in all other cases the most appropriate form of inoculation. Such primary inoculation ought, however, in all cases to be followed up by second inoculations with an increased dose of vaccine.

It is to be noted that the procedure for increasing the bactericidal power of the blood which has just been recommended as that which seems dictated by the facts disclosed by the present investigation, is in all respects the same as that which is universally followed in the

preparation of antitoxins, and which is approved by the facts revealed by Ehrlich's fundamentally important researches on the sequence of events following the administration of tetanus toxin to goats. It would thus appear that the principle of the procedure recommended above is entitled to rank as a general principle of immunisation. As such it would, of course, apply not only to the anti typhoid inoculations which are here in question, but also to all procedures for immunisation and notably to the anti plague inoculation introduced by Mr Haffkine.

Of subordinate importance to the general theorems formulated above are the following which relate only to special classes of cases.

4 Where the blood of a patient who has recovered from typhoid fever is found to possess a bactericidal power inferior to the average, and where re exposure to typhoid infection is contemplated, it would seem advisable to secure for the patient the additional protection associated with the possession of a high bactericidal power. This additional security can, if it is permissible to generalise from the observations detailed above in connexion with Patient 16, be conferred by the inoculation of an appropriate quantum of anti typhoid vaccine.

5 On the other hand, where the blood of a patient who has recovered from typhoid fever is found to possess a bactericidal power considerably above the average, it would, judging from the observations made in the case of Patient 15, taken together with certain other data in the table incidentally referred to below, appear to be impracticable to increase that bactericidal power by the inoculation of sterilised cultures.

6 Wherever a doubt as to the efficacy of a particular anti typhoid vaccine arises—and such doubts may obviously arise, either in connexion with modifications introduced in the methods of preparing the vaccine or in connexion with prolonged storage of the vaccine under unfavourable circumstances—it will always be possible to arrive at a decision on the efficacy of the vaccine by observing the effect exerted by the vaccine in question upon the bactericidal power of the blood.

In conclusion, attention may be directed to the fact that it has been considered expedient to pass over in silence in the present communication one issue of fundamental importance which arises in connexion with the effect exerted on the bactericidal power of the blood by anti typhoid inoculation. That issue arises in connexion with the question as to whether the bactericidal effects registered are the resultant effects of two different kinds of protective substances acting in conjunction. In connexion with this it may be merely noted here that there appears to be a very definite limit beyond which the bactericidal power of the blood cannot, it would seem, be increased by inoculation with sterilised cultures of the typhoid bacillus."

TWO PHYSICAL SIGNS IN SCIATICA

SCIATICA is a disease which is not uncommonly feigned, in which case a true diagnosis may not be easy to arrive at. In this reason the following two signs may be found useful, they are described by Dr Wm Ewart in the August number of the *Polyclinic* (p 69).

"*Lasèque's sign* is as follows.—In the relatively mild cases in question a full length and perfectly symmetrical dorsal decubitus can be assumed, but if the patient be made to sit up, the previously extended leg is found to become rigidly semi flexed at the knee, it cannot be straightened by any voluntary effort and hardly yields to the most forcible attempts at extension, returning with a jerk to the previous angle as soon as the strong pressure is taken off. But it is spontaneously straightened if the patient lies down again. This is the first and

most constant of the two signs. A modification of it may be obtained whilst the patient remains in the dorsal posture. In this position the unsound leg cannot be raised with unbent knee to a right angle with the trunk. As it is lifted from the bed the knee becomes gradually flexed—and if its flexion be forcibly opposed pain is set up. The flexion gives way when the limb is lowered, and the leg is then quite straight.

(2) *The crossed sciatic phenomenon of J Fajersztajn*.—This interesting sign was exceedingly well marked in my patient Fajersztajn, who has recently described it, finds it present in the majority of cases of sciatica. In a series of forty one cases of rheumatic sciatica it occurred in twenty-five and was doubtful in five. The patient being on his back the bad leg cannot be raised without bending the knee as stated, but the sound leg can be raised to a right angle with the hip without any flexion at the knee. This, however, cannot be accomplished without pain and sometimes severe pain. The pain is not felt on the sound side, but in the sciatic nerve of the other side. The explanation is not very obvious. Fajersztajn has made experiments upon the dead body to prove that stretching the sound nerve might interfere with the nerve affected. Perhaps the pain is due to a slight tilting of the pelvis incidental to raising the sound leg. At any rate the phenomenon is clinically of some importance as it may by its disappearance, as in the case which was under my observation, indicate a stage in the progress towards recovery."

THE "NATURAL PURIFICATION" OF RUNNING WATER

THE following is the summary of a long and valuable article by Prof Sheridan Délepine, of Owen's College, on the natural purification of running water (*J of State Med*, August, 1901).

The results of my investigations may be summed up as follows—

1 Water flowing through channels, open or covered, gradually loses part of its original bacterial contents. This bacterial purification is easily observed in rivers and in water flowing through long drains.

2 The purification is sufficiently rapid to have made it possible to observe appreciable changes in the bacterial contents of good drinking water during its slow passage through a system of small vessels and tubes, the total length of which did not exceed 150 cm (50 cm only being occupied by vessels of large diameter, in which the rate of flow varied from 3 cm to 20 cm per hour).

3 The greatest amount of purification occurred when the rate of flow in the above apparatus was about 8 cm per hour. When the rate fell below 4 cm there was an increase instead of a reduction in the number of bacteria.

4 The conditions of the experiments were such as to exclude any material differential effects from the temperature, light, pressure and vital concurrence upon the water of any one vessel. On the other hand, the relative influence of dilution, aëration, agitation, sedimentation and bacterial multiplication could be estimated with a certain amount of accuracy.

5 The effect of agitation was an increase in the number of suspended bacteria. This increase I attribute to the dislodgement of deposits formed on the sides and at the bottom of the vessels.

6 Aëration produced no material alteration in the number of bacteria present in the water flowing through the apparatus.

* That is to say that these factors, acting equally upon the water contained in the various reservoirs composing the apparatus, whatever action they may have had, this action would not account for the differences observed.

7 *Dilution*—i.e., the addition of fresh water containing few bacteria to flowing water containing a greater number of bacteria, caused an immediate diminution in the number of bacteria contained in a given quantity of water (It is well to remember that a dilution of impure water with pure water has not only the mechanical effect of increasing the space occupied by a definite number of bacteria, but, in addition, dilution causes a diminution in the amount of pabulum present in a given bulk of the impure fluid)

8 In those vessels where the action of dilution could be excluded a marked bacterial purification was nevertheless observed during the passage of water through the vessels. This was specially noticeable when the rate of flow ranged between 8 cm and 15 cm per hour, being most marked when the rate was between 8 cm and 10 cm. This purification was due chiefly to *sedimentation*, as was actually proved by presence in the sediment of bacteria which had disappeared from the running water. It has been shown in the first part of this paper that bacteria thrown out of suspension by sedimentation gradually die, so that sedimentation must lead ultimately to a true purification of water.

9 When the rate of flow fell below 4 cm per hour there was a marked increase of bacterial impurity, which was due to *multiplication* of bacteria.

10 Complete *stagnation* led, for the same reason, to a still greater increase of bacterial impurity.

Conclusions—From these observations I conclude

I That sedimentation is a very important factor of bacterial purification in flowing water.

II That the effects of sedimentation are most manifest when the flow of water is rapid enough to prevent the accumulation at any point of the products of bacterial multiplication, but not so rapid as to interfere with a comparatively rapid action of gravity.

III That agitation of water (as opposed to continuous flowing motion) by disturbing the sediment containing the bacteria which have been thrown out of suspension interferes with the purification of water by sedimentation.

IV That in the construction of small service reservoirs for the storage of drinking water no stagnation should be allowed, and that the banks or sides should be so constructed as to prevent the disturbance of any sediment formed on the sides or at the bottom of the reservoir.

V That bacteriological analysis of water obtained from consumers taps (water "as supplied to the consumer," according to a common expression) cannot be depended upon as giving an idea of the safety of a water supply. Under ordinary circumstances, when the mains are sound, an undisturbed water collected from outlets, which are not unfrequently several miles from the service reservoir, is always purer than the same water as it enters the main. On the other hand, when the mains are frequently flushed or the rate of flow is liable to sudden alterations, a very considerable increase is usually observed in the bacterial contents.

VI That it would be possible to purify water for drinking purposes by causing it to flow at a suitable rate through a sufficiently extensive system of channels and reservoir, but that it is not at present possible to state whether such a system of artificial purification would be practicable from an economic point of view.

NOTICES OF OUR "SPECIAL OPHTHALMIC NUMBER"

We have already alluded to the two column editorial article in the *Lancet*, reviewing in most appreciative language our special ophthalmic Number of June last. We now quote two other notices which are equally appreciative. That the work of surgeons in India on Stone and

Cataract would "stagger humanity" we were aware, if only that work were known to our *confidés* at home, and that this has been accomplished by our two special numbers we think we may believe. The *Edinburgh Medical Journal* (September 1901), in a note written by two of the leading ophthalmic surgeons of that city, writes as follows—

"The special 'Cataract' number of the *Indian Medical Gazette* forms very interesting reading, if it were only as showing two things, the extraordinary number of patients undergoing operation, and the fact that good results may be obtained by surgeons whose methods are, as one might say, diametrically opposed. The numbers are such as would, in the now classical phrase, "stagger humanity," or at least European humanity, for example, Smith of Jullunder, Punjab, gives statistics of his results in nearly 2,000 cases, these representing less than a year's work. He tells us that during a recent month of thirty-one days he operated on 688 cataracts, and during that time on each of two particular days he operated upon forty-four patients. The papers are all exceedingly practical, and well worth study by any one whose work lies in that direction. One cannot fail to be struck with the much more free use of antiseptic solutions of greater concentration than are ever, we should imagine, used here. As one of the writers says, it may or may not be all very well to aim at asepsis at home, but in the vastly different conditions of Indian life and Indian patients, nothing short of antiseptics can ever be worthy of dependence. In the actual operation, in the use of eserine or atropine, or neither, in the position of the wound, in the performance of an iridectomy or not, there are marked divergences of habit, and predilection, as one would indeed expect. There are differences in the recuperative powers in the patients, recruited from different tribes and districts, the fact that numbers are illiterate makes it difficult to record vision with exactitude, the inability of so many to return probably causes unripe cataract to be attacked much more often than at home, and a form of operation to be favoured, which by one means or another avoids necessity for a subsequent needling. It is no doubt this last consideration which has weighed to some extent with one surgeon of immense experience, in inducing him to adopt, as his customary method, extraction in the capsule, an operation rarely performed in this country in uncomplicated cases."

The *Ophthalmic Review* (September 1901), the leading journal in the English language devoted to that speciality writes as follows—

The Editors of the *Indian Medical Gazette* have put into practice the idea adopted at times by other medical periodicals, of publishing one number of their Journal devoted entirely to a special branch of medical science and practice.

The June number of the *Indian Medical Gazette* is a "Special Ophthalmic Number" and contains a large amount of information which is of great interest to all ophthalmologists, and perhaps particularly so to those who do not know India, or the peculiarities of medical and surgical work there.

The text of the majority of the articles in the Journal before us is, as might be expected, cataract and its operative treatment. The vast experience in the treatment of cataract which surgeons in India gain lends great weight to their opinions as to the methods by which the best, i.e., the most generally satisfactory results are to be obtained. It is, however, only fair to add that strict comparison of the operation in this country and in India is scarcely possible, and would certainly be misleading. The disease is the same, but the subjects of it, and the conditions under which they

live, are widely different from those in western climes. Moreover, judging by the expressions of opinion in the *Indian Medical Gazette*, the standard of visual acuity after operation may be decidedly lower in India than in this country and yet give satisfaction to the majority of the patients.

Perusal of the articles in the *Indian Medical Gazette* will quickly show that there are the usual differences, often in matters of detail only, between surgeons in India, as in this country. One important point which attracts attention, is that the writers appear to treat the conjunctival sac much more actively than is the case at home. For instance, one writer washes the conjunctiva with a 1 per cent carbolic acid solution, and others with a solution of perchloride of mercury, 1 in 3000 or 1 in 4000. We may, perhaps, assume that this means that the conjunctiva of the natives of India is generally more susceptible than that of western peoples, and demands the employment of antiseptic rather than aseptic measures.

Space will not permit us to notice in detail the varieties of operation advocated by different surgeons, they form an interesting study, however, and are worthy of it.

Altogether we congratulate the editorial staff of the *Indian Medical Gazette* on their "Special Ophthalmic Number."

THE attempt to find out the secret of the etiology of yellow fever has, it is well known, cost the lives of such valuable workers as Myers and Lazeais, but according to an editorial note in the *Boston Medical and Surgical Journal* (August 29th) it appears that Dr Lazeais has been by no means the last of the victims of the experiments on the mosquito yellow fever theory. We have already referred to these experiments, which are still being continued, and volunteers are apparently not lacking, who are willing to submit to the possibility of infection. Most unfortunately, however, says our Boston contemporary, several of these experiments are said to have resulted fatally.

These experiments have been conducted under rigid scientific conditions, and though we are as far as ever from an exact knowledge of the germ or parasite of yellow fever, Sanarelli's bacillus being at present discredited, it would appear as if the mosquito was the undoubted conveyer of the disease. We hope that the stories of the deaths of the men who volunteered to be infected by means of mosquitos may be untrue or exaggerated, the death of these volunteers is a very high price to pay for our knowledge, but if their deaths led to an accurate knowledge of how to avoid and prevent this very fatal disease they would not have lost their lives in vain.

THE exact part played in the diarrhoeas and dysenteries of hot climates by the *Rhabdonema intestinale*, or *anguillula stercoralis* as its better known rhabditiform phase is called, has always been a matter of uncertainty since the nematode was discovered by Normand in 1876. It is generally believed to be harmless, Manson thinks it doubtful if it can even produce a slight degree of intestinal catarrh, and Briault (*Maladies des*

Pays Chauds, p 107) sums up thus a discussion on the worm, "it exists simply as a sort of epiphenomenon, the anguillula is introduced accidentally into the digestive system, because it finds in the condition of the intestinal secretions a milieu favourable to its existence and reproduction." More recently, however, Dr Strong, Director of the Army Pathological Laboratory at Manila, reports on a case of a patient, eight years a resident of Baltimore, U S A. (*Johns Hopkins Bulletin*, X, Nos 1, 2, 1901), who suffered from chronic diarrhoea and liver abscesses, in the pus of the abscesses amœbæ were found, and a microscopic examination of the stools showed embryos of the anguillula and amœbæ. At the autopsy the "parasitic form" of the adult female *Rhabdonema* was found in the small intestine. Strong refers to four other cases of infection by this worm, causing intermittent diarrhoea and gastro-intestinal disturbances. In the Baltimore case "the eggs, embryos and the worms" were found in the glands of Lieberkuhn, where they produced atrophy of the epithelium and round celled infiltration — (*Philadelphia Medical Journal*, 31st August 1901).

UP to 4th September 1901 there had been 201,719 persons inoculated against plague in Bombay since 1st October 1891.

THE embryos of the *Filaria sanguinis hominis* have recently been used, in an interesting way to prove the existence of human blood on stained clothes. In the case of a man accused of killing a syce in the compound of the Bengal Club, Calcutta, the Additional Chemical Examiner, Dr Chuni Lall Bose, deposed to finding the embryos of this worm in the blood stains, hence he concluded that the stains were human blood, as this filaria does not inhabit the blood of any other mammal.

THE following is an extract from the Resolution on the Plague Operations in the North-West Provinces —

"The marked preponderance of the mortality amongst Hindus over all other races in Benares city is clearly demonstrated in the report of Major Scotland, I M S, the Medical Officer in charge of plague operations. Out of a total of 2,729 deaths no less than 2,348 occurred amongst Hindus. The classes trading in grain, spices, and other food stuffs, *telis*, *baniyas*, and *kalyars*, were particularly affected, 1,012 persons, or nearly half the total deaths amongst Hindus, succumbing. The susceptibility of these classes to infection is attributed to the dissemination of plague germs through the agency of rats, which are attracted by the substances these classes trade in.

There is a consensus of opinion amongst the District officials that, owing to the ignorance and credulity of the people, disinfection was a very unpopular measure of precaution against plague, its adoption gave rise to much of the opposition in the early stages of the epidemic. The use of perchloride of mercury was strongly object

to, no objection was raised to the use of sulphur, which is consonant with the customs of the people, though of no practical benefit. The unroofing of houses and segregation of contacts were generally opposed and could not, except in rare instances, be enforced. The advantages of evacuation were recognised too late by the people, but there are indications that, should there be a recrudescence of the disease, this measure will be freely adopted. Inoculation was tried as a purely voluntary measure in the city of Benares, but did not meet with much success. Its advantages as a prophylactic are in several instances clearly demonstrated by Captain Robertson, I.M.S., in his report, but the number of inoculations performed—1,172 in all—out of a population of nearly a quarter of a million was insignificant."

WE are requested to state that any member of the XIII Congrès International de Médecine who has not received a copy of the Transactions is requested to apply at once to the Editors of the Congress c/o Masson & Co 120, Boulevard St Germain, Paris

WE regret that, owing to illustrations not being ready in time, we are unable in this issue to publish a continuation of the paper by Capt W Glen Liston, I.M.S., on the species of anopheles found in India. In December, however, we shall give a description of several more species of anopheles, which have been named, *eg*, A Stephens, A James and A Turkudi.

MANY of our readers will have read in the *British Medical Journal* (September 28th) the announcement that Sir Francis Lovell, C.M.G., late Surgeon-General of Trinidad, was about to undertake a mission to tropical countries in furtherance of the objects of the London School of Tropical Medicine, and among other countries that India was to be visited. The object of Sir Francis' visit is to, plead the claims of the Tropical School of Medicine and to receive subscriptions in its aid. We have every sympathy with the objects of the London School of Tropical Medicine, and gladly admit its necessity and the amount of good work it is capable of doing, but in so admitting, we are far from agreeing with the proposal to raise subscriptions for it from the poor and apathetic people of India. Charity begins at home, and as every Civil Surgeon in India is busy raising funds and subscriptions for the upkeep and improvement of the hundreds of civil hospitals and dispensaries in India, we cannot imagine that they will see their way to help to increase the funds of a Tropical School of Medicine, situated in the richest city in the world. Nor are we at all inclined to admit that a hospital or school at home is the best place for studying tropical diseases. A month spent in any of the big hospitals in Calcutta, Madras or Bombay, or even in many up-country hospitals, would probably be worth a year's work at home. Most certainly the wants of our hospitals are too many, to

permit us to recommend that any money be sent out of the country. Let the citizens of London be as spirited as those of Liverpool, and there will be no need of sending all round the empire for subscriptions.

Reviews

On Paralysis Agitans, with an account of the Clinical features of other forms of Tremor. By R. T. WILLIAMSON, M.D. (Lond), F.R.C.P., Physician to the Ancoats Hospital, Manchester, and Assistant Lecturer on Medicine, Owen's College, Manchester. Sherratt and Hughes, 1901, pp 70, with ten illustrations.

THIS monograph, portions of which have already appeared in *The Medical Chronicle*, contains an excellent account of the symptoms, diagnosis, etiology, pathogenesis and treatment of this comparatively rare disease. Dr Williamson calls it 'very rare,' because so rarely met with in hospital practice. But as it is generally known to be a fatal disease for which medical science can do little, people suffering from it probably do not go to hospital. Although it is 84 years since James Parkinson, M.D., described the disease we know very little more of its pathology than we did. Beyond the facts that psychological trauma (fright, &c), mechanical injury and overstrain are exciting causes and that it occurs usually late in life, our knowledge of its etiology is nil. Though we have seen cases in Europeans in India we have not yet met with one in a native. In the treatment of its life in the open air, especially a daily drive, avoidance of alcohol, tea and coffee, are important. All drugs have been found useless except hyoscine hydrobromate, duboisine and hyoscyamine. The first named given in chloroform water in doses rising from $\frac{1}{16}$ to $\frac{1}{8}$, and even in some cases to $\frac{1}{4}$ with special precautions, has given Dr Williamson good results. The description of other forms of tremor is a most useful chapter, while the bibliography is complete. The publishers have done their work exceedingly well.

Invalid Recipes. By E. E. MANN, Teacher of Cookery, Liverpool Longmans, Green & Co, 1901. Price 6d.

THIS is an admirable little book, costing only six pence, but invaluable to those who have the case of the sick or convalescent. The author is the Head Teacher of Cookery in the Liverpool Training School of Cookery, and the author of several little books on Cookery.

The contents of the little book are as follows—

31 recipes for broths, beverages and liquid foods, *eg*, beef tea, gruel, peptonised foods, rice-water, treacle posset, etc. Then come ten recipes of meat and fish, as boiled whiting,

tubercle and 26 cases of "anamia and debility" with no less than 14 deaths attributed to this vague symptomatic heading. We again invite attention to the Director General's remarks upon this very unsatisfactory "cause of death." In overcrowded jails we are not surprised to read of 22 cases of pneumonia and 74 deaths. As regards diarrhoea we read of 9 deaths out of only 26 cases in Dhauwar, which is passing strange, 5 deaths out of 48 cases at Thanna 17 deaths out of 78 cases at Ahmedabad. We presume this was "famine diarrhoea" but still we would expect more admissions to hospital, if the new arrivals suffered much from this complaint. The following jails showed very satisfactory low death rates, viz Yeroda only 22 per mille, Karachi, only 16 per mille, the Deccan gang, 15 only, and Bijapur only 7 per mille. The latter in spite of overcrowding is very creditable.

The above statistics are somewhat melancholy reading, but in view of the famine-stricken condition of the general population and the new admissions and the extreme degree of overcrowding that existed, it is difficult to see how much better results could be expected.

We would have liked to see some more pointed remarks by the Inspector General on the subject of overcrowding. The Report is largely a proof of the very certain evil effects of overcrowding—a factor in the health of jails or soldiers' barracks which can never be neglected with impunity.

MADRAS CIVIL HOSPITALS REPORT

The notes attached to this Report for 1900 are very scanty in accordance with the recent orders, hence it is difficult to extract much of medical interest. Owing to the unusual prevalence of fever in the Katty Valley in the Nilgiris, a temporary dispensary was opened. Twelve dispensaries were closed for varying periods owing to the services of the medical subordinates being required for other duties, we note that there has been a large increase in the attendances at all dispensaries. There was a noteworthy decrease in the attendances for malaria of over 8,300, but no less than 6,337 more cases of cholera were treated for in Madras, as in the rest of India, the last year of the century was a bad one for cholera. The number of Surgical Operations increased by over 16,000. The following medical officers are specially commended on account of the amount and quality of the surgical work performed, viz Lieutenant-Colonels A. H. Leapingwell, T. J. Hackett-Williams, H. A. F. Naylor, and W. F. Thomas M.D., Major D. Simpson, Captain P. C. Gabbett, and Civil Assistant Surgeons I. Fernandez, C. M. Mudali, B. F. Gonzalez, D. G. Pillai, T. R. L. P. Pillai, and S. C. Mudali.

Running through statement III A, we find the following important operations were performed—Amputations, 417 trephining, 2, harelip, 18, cataract, 298, excision of breast, 22, abdominal sections (not further specified), 7, gastro-enterostomy, 1, enterostomy, 1, colotomy, 1, intestinal obstruction, 2, operations for hernia, 224 (10 died, 2 discharged otherwise, 127 relieved and 87 cured), abscess of liver 10, operations (6 cured), 143 operations for hemorrhoids, lithotomy, 25, lithotomy, 13, urethral calculus, 126, operations for hydrocele (not further specified), 2,623, ovariectomy, 6, tapping ovarian cyst, 22, urinary fistula, 18, repair of perineum, 51, obstetric operations, 1,193.

The only comment contained in the Government Resolution (which consists of less than four lines) is that the cause of the increase in eye diseases should be inquired into.

CIVIL MEDICAL INSTITUTIONS, MADRAS CITY

This report is also remarkable for its brevity. The total number of beds available in Madras city was 1,365, in which 19,553 cases were treated. The out-patients treated amounted to 217,319, and in both in and out patients very large increases are recorded. In the three lying in hospitals an increase of 625 cases is recorded, which is very satisfactory. Cholera was epidemic in Madras during the last half of the year, and 320 cases were treated, six of these were attacked while in patients at the General Hospital. Concurrently there was an epidemic of enteric fever, 97 cases were treated in the General Hospital, of which 68 were admitted in the last five months of the year. It is noteworthy that out of the 97 cases no less than 21 were natives, and in three out of the five fatal cases in natives the diagnosis was confirmed at the autopsy. Measles seems to be a very common disease in Madras, 290 cases having been admitted during the year, but the average of ten years shows 444 cases of measles admitted to hospital yearly.

A feature in the Madras returns which we do not find mentioned in those of other provinces is the number of deaths from "Septic diseases," here are recorded eight such deaths "acquired in hospital," and 64 "acquired before admission." We would like to have a more detailed explanation of the nature and causes of these cases.

The total number of operations done was 16,703, or more than in previous year. The most important were external, 1,161 amputations, 117, hernia, 105, abdominal sections, 107, and obstetric operations 551. The number of operations grouped as "abdominal sections" is very high, 107, which represents a large amount of good surgery.

The following medical officers are mentioned by the Surgeon General for the amount and quality of their surgical work—Lieutenant-Colonels A. J. Stormer, J. Maitland, T. H. Pope, Captains G. G. Gifford, C. Donovan, H. J. Fraser, W. J. Niddock, Assistant Surgeons K. V. Row, Civil Apothecaries M. Govindarajulu and A. S. V. Row. Clinical instruction is given to students in the following hospitals—General Maternity, Ophthalmic and Native Infirmary. The class of women applying for training at the Training School of the General Hospital is slowly but steadily improving. At the Government Maternity Hospital on the other hand, difficulty is experienced in obtaining a satisfactory class of women for training as European and Indian nurses. There is only one registered applicant on the list.

Turning to Statement III A we find among a total of 16,703 operations the following more important ones—Tumours, 122, operations on bones, 137, amputations, 117, trephining, 8, mastoid cells, 3, extractions 146, hydrocystomy, 216, thyroectomy 3, excision of breasts, 3, abdominal sections, 105, gastrostomy 1, operations on intestines 7, for hernia 105 (87 cured), for abscess of liver 22, of which 9 were cured and 2 relieved, cholecystotomy, 2, nephrotomy, 1, nephro lithotomy 1, for piles 15, lithotomy 1, litholapaxy 4, urethral calculus 10, for hydrocele, 1,427 (methods not stated), for elephantoid scrotum 53, vasectomy 5, ovariectomies, 5, uterine appendages 8, extra-uterine gestation, 5, removal of uterus, 5, removal of uterus per vaginam, 1, obstetric operations, 551.

It is clear, therefore, that the report is a record of a large amount of good surgical and medical work.

THE N. W. P. & O. SANITARY COMMISSIONER'S REPORT

The Sanitary Report for N. W. P. and O. for 1900 was not published till August 1901, consequently the birth and death rates were calculated on the new census, which gave a total population of 46,004,701. The birth rate was high, 40.3, but was less than that of previous year, 48, but higher than the five-year average 37.1. The death rate was 31.1 compared with 33 in previous year and 32.7 the quinquennial mean. The year 1900 in this Province, in contrast to many other parts of India, was a healthy one. The proportion of male to female births was 1,074 to 1,000, being identical with that of 1899. The following table gives the ratios of deaths per mille in various provinces in 1900—

Bengal 36.6	Bombay, 70.0
N. W. P. and O., 31.1	Madras 23.4
Punjab, 41.6	C. Prov., 58.7

The infantile death rate was 219 compared with 230 the decennial average.

As is usual October is the most unhealthy month, the death rate was lowest in February, rose practically but steadily till its maximum in October and November.

As bearing on the question of the reliability of the usual death-statistics the following is worth recording—Out of 11,321 "verified causes of death" 2,022 were attributed to malaria (17 per cent.), 324 to "anemia and debility" (2.8 per cent.), 2,122 to diarrhoea and dysentery (18 per cent.), pneumonia and lungs disease 1,461 (12 per cent.), 19 to enteric fever (16 per cent.), 646 from cholera (5 per cent.), and 74 from smallpox (6 per cent.).

This shows that whereas in the 11,000 odd "verified" deaths the ratio to be attributed to malaria is only 17 per cent. and to bowel complaints 18 per cent., yet in the total statistics of the province out of 1,460,141 deaths, no less than 68 per cent. are attributed to malaria or rather "fevers," and only 2 per cent. to diarrhoea and dysentery. It is probable that could the whole of the deaths of a province be similarly "verified," it would be found that 15 per cent. of the total mortality would represent the malaria mortality (not 68) and about 15 to 17 per cent. the mortality from diarrhoea and dysentery. We do not wish to push this point too far, but it certainly shows that the 60 and 70 per cents. usually attributed to malaria are very largely exaggerated, even allowing for the well known effects of malaria in influencing other diseases. The deaths from dysentery are certainly far higher than the 2 per cent. and much more like the 18 per cent. of the "verified cases."

Turning now to the chief diseases we find (as in other provinces) a very large rise in Cholera mortality, from 17 to 1.8 per mille. The disease was worst in Sultanpuri District. The Hardwar, Dadrí and Magh Mela fairs again passed off without the appearance of epidemic disease, we hope the Sanitary Commissioner is correct in attributing this remark-

able and satisfactory immunity to the sanitary precautions taken, it is difficult to see what else could have effected it.

Smallpox was very slightly prevalent during the year, the ratio being 0.3, the lowest on record. Aligarh suffered slightly, most other districts practically escaped.

As for the malarial fevers we have noted that 68 per cent. of the total mortality was embraced under the term "fevers," and this ratio is less than that of the previous five year period. The maximum was in October and the minimum in February, as is the case with the total mortality. The canal irrigated districts (it is worth noting now that irrigation measures are being so largely undertaken) head the list of fever districts. As the Sanitary Commissioner says

"It is probable that even with the best system of drainage the inhabitants of the irrigated districts must expect to pay for their abundant crops and independence of rainfall by a somewhat higher death rate from malarial fever, especially in a wet year." The question of the increase in malaria in newly irrigated districts in connection with increased acreage of rice crops and increased irrigation is one which should be very carefully examined. The question, if we remember right, was gone into in Bengal many years ago by a Commission, of which Mr Cotton was the head.

Among the larger towns the following important towns head the fever list—Muttra, Agra, Aligarh, Cawnpore, and of the smaller towns the ones with highest fever rate "all lie in the canal districts."

The following notes on the water supplies of the larger cities are of special interest in view of Lieutenant Colonel Giles' opinions as to the cause of increased malaria, and Captain L. Roger's article in the last issue of the Gazette. Benares has 12.7 gallons per head of the population *per diem*. Lucknow has 4.1 gallons, Cawnpore, 10.5 gallons, Agra, 8.2 gallons, Allahabad 9.4 gallons. Meerut 8 gallons, Dehra, 6.6 gallons, Mussorie 4.2 gallons, Naini Tal, 9 gallons. The statement showing the death rates and the localities where a drainage system or a water supply has been introduced during recent years is not a very satisfactory one, but as the Sanitary Commissioner says it would be premature to draw deductions from these figures. As regards cities now provided with filtered and good water supplies, a large proportion of the inhabitants still continue to drink from choice from the frequently polluted wells, and the good results of the introduction of the schemes are thereby largely nullified.

Except at Mau Aima in Allahabad District, only 25 cases of Plague were reported in the provinces during the year 1900.

The report of the Sanitary Engineer is also interesting as it gives many details of the working of the water works, except at Agra the water supplied was of good quality throughout the year, and steps have been taken at Agra to ensure the purity of the water.

The outbreak at Mau Aima is referred to in the Government resolution, and the good work done by Major H. W. Stevenson and Captain Davidson, I.M.S., is suitably recognised. The success of these plague operations at Mau Aima is a proof of the efficacy of thorough measures of evacuation and segregation when it is possible to carry them out.

The report is an interesting one and shows that an immense amount of good work was done by Lieutenant Colonel S. J. Thompson, C.I.E., I.M.S., and the officers who worked with him.

THE MADRAS SANITARY REPORT

The price of food grains in Madras was high during the year, and the effect of the price of food on the health of the people is graphically indicated in the diagrams given in the report. The population of the Madras Presidency has increased, as shown by the provisional figures of the recent census, from 35 millions to 38 millions.

The birth rate was 31.8 per mille or 0.5 more than that of the previous year, and considerably higher than the figures recorded for any other year in the decade, the proportion of male to female births was 104.6 to 100.

The death rate of the province is reported as only 23.4 per mille, a low death rate, but higher than that of 1899, or of most years in the past decade. The death rate of Ganjam is the lowest, viz. 16.4 per mille, and that of Nilgiris the highest, viz. 31.4. The infantile death rate is 16.4 per mille of registered births.

As regards the chief diseases the total mortality from cholera amounts to over 60,000, or 1.5 per mille of the population, a considerable increase over the previous year's record. This increase was observed in all districts, and was heaviest in districts affected by the S.W. monsoon in July, August and September, and those affected by the N.E. monsoon in October, November and December. Certain orders of the Board of Revenue, which seriously interfered with the prompt collection of information as to outbreaks, were, in accordance with the representations of the Sanitary Commissioner, rescinded by order of Government.

The use of permanganate of potash was favourably reported upon. There was an increase also in the number of deaths from small pox. The Sanitary Commissioner says that the infantile mortality from this cause cannot be minimised until vaccination is made compulsory in the rural areas. The death rate among the rural population was three times as great as among the urban population, where vaccination is compulsory, a fact which speaks for itself. "Fever" caused 289,521 deaths, an increase in all districts. We note that the death rate from dysentery was 1.2 per mille in 7,286 villages and 7.7 in Madras, a fact which points chiefly to increased accuracy of diagnosis in the city of Madras as contrasted with rural villages.

In 1900 no less than 13,677 deaths as registered as brought about by injuries suicide accounts for some 1,550 of these. Snake bite for 2,217 and 200 were "killed by wild beasts." The increase in deaths from "other causes" may be due to the avoidance of the "fever" herding, as it might bring with it an inquiry into the possibility of plague.

The Madras Presidency was almost free from plague during the year, a remarkable and satisfactory fact, only 897 cases having occurred.

Major A. E. Grant, I.M.S., submits the report, but the chapter on personal proceedings was left ready by Lieutenant Colonel W. G. King, C.I.E., I.M.S., before he went on well earned furlough.

That bugbear of sanitary effort, the "eternal want of pence," which vexes Indian municipalities, prevented any real extension of Lieutenant Colonel King's scheme of using "Certified Sanitary Inspectors." There are now available in Madras no less than 322 certificated Sanitary Inspectors, but only sixteen are employed by District Boards and 108 by municipalities. We note that the Lieutenant-General Madras Command, approves of a scheme to send selected British soldiers to undergo training and get certificates as Sanitary Inspectors, with a view to future service in Cantonments. We hope that this scheme, which is pregnant of good, will be realised.

We note that Lieutenant Colonel King, I.M.S., is examining into the question of tuberculosis among cattle in India, but so far had not seen a case. It exists in Bengal cattle, and it is next to impossible that it should not be found among cattle in other parts of India.

Captain Gifford, I.M.S., submitted a report on marked nerve symptoms in a beriberi outbreak among sepoys in a regiment in the North Circars, "which is of interest in view of the scepticism of certain authorities as to the existence of the disease in this area." (See *Indian Medical Gazette* 1901, January, p. 35.)

In regard to Malaria circulars were issued giving advice as to the extermination of anophelids and the limiting of infection by the use of quinine and it was pointed out that former theories as to the influence of surface and subsoil drainage had gained—not decreased—in value by the new theory, a warning was also included against the premature abandonment of the additional theory of water infection. Certain spotted winged mosquitos of genus *Culex* were noted also.

We are glad to note that Colonel King's plan for a Vaccine Institute has been sanctioned, it may possibly be combined with a Bacteriological Laboratory, which is one of the urgent needs of the Presidency.

Dr. Srinivasa Rao, Bacteriologist to the Mysore Government, made many important experiments on the comparative values of lanolin, vaselin and glycerin, as preservatives of animal vaccine, and it is maintained that lanolin is, in a tropical climate, the best available preservative.

It is also said that some exaggeration exists as to the importance of the absence of "extraneous organisms" from vaccine lymph. It may be remembered that Dr. Copeman first supposed and afterwards denied the gradual extinction of such organisms in lanolin. In the new institute both glycerin and lanolin lymph will be prepared.

We note that in Madras the methods of biological purification are likely to become popular.

We may add that the Government Resolution noted that the report was not "curtailed" as required by Government.

THE BENGAL VACCINATION REPORT

There was an increase of over 93,000 operations of vaccination during the year ending March 31st, 1901 the total performed being 2,346,311. This increase was seen in 31 districts and falling off in 11. The districts which show a decrease were Balasore, Sonthal Pargannas, Bankura, Sarin, Bhagulpur, Gaya, Rangpur, Patna, Cuttack, and Puri. The presence of plague accounts for several of these districts. The great difficulty in Puri is to get licensed vaccinators owing to the well known difficulty of realising fees. The average number of vaccinations done per man (including his apprentices) was 944. The number of primary vaccinations slightly increased, and the ratio per cent. of success is given at

97.75. During the year the proportion of infants successfully vaccinated per 1,000 of the surviving infant population was 180, or, in other words, out of 3,417,036 children under one year only 589,376 were successfully vaccinated that is only one fifth of the available infants. This degree of infant protection varies enormously, from a high degree in Dacca, Malda, Bhagalpur Ranchi, and Khulna, to a very low rate in many other districts. In view of the facts it is satisfactory to learn that there has been a marked improvement in the protection afforded to infants in municipalities where the Compulsory Act was in force. There was also a considerable increase in the revaccinations and the percentage success was 59. We note that there were 55,867 vaccinations of six punctures.

The year was a bad one for small pox, showing an increase of 11,030 deaths, especially in Cuttack, Calcutta, Midnapore, Puri, Gaya and Palamau.

Of 476 cases admitted to the Campbell Medical School 124 were vaccinated (* in infancy), 4 inoculated (* the number is too low surely) and 348 were unprotected. The ratio per cent of deaths among the vaccinated was 9.6 among the inoculated, 25, and among the unprotected, 58 facts which speak for themselves.

Major Dyson, I.M.S., F.R.C.S., the Sanitary Commissioner, who submits the report noted that owing to the increasing use of calf lymph and lanolin lymph the two depots at Ghoomand in Calcutta, are not able to meet the demands, and at least two more depots are required one will shortly be established, and another is urgently required for Orissa. Arm to arm vaccination is still by far the most used, but the use of calf and lanolin lymph is steadily increasing. The unvaccinated condition of immigrants into Calcutta is a matter at present engaging the attention of Government.

We venture to suggest that the diagram on page 4 of the Report would be more easily understood if a red or blue line were used instead of a thin black line to indicate the deaths from small pox.

THE MADRAS VACCINATION REPORT

This report is submitted by Captain I. W. Cornwall I.M.S., acting Inspector of Vaccination and Deputy Sanitary Commissioner for Madras, though that post was held in 1900 by Captain W. O. Vickers, I.M.S., and Major A. I. Grant I.M.S.

The total number of vaccinations done was 1,257,883 an increase on those of previous year. The ratio per cent of total successful cases was 91.1. We note a substantial increase in the number of children under one year vaccinated in 1900.

As regards the kinds of lymph used we noted that over 404,000 cases were done with glycerinated lymph with a success of 91.5, next comes 210,960 cases arm to arm with 93.8 success, then 107,071 cases with lanolin lymph with 93.4 success (lymph supplied by the Bangalore Institute). "Locally prepared" lanolin lymph did not give such good results, viz., 79, and 88 per cent of success. These figures would as Captain Cornwall remarks, be of more value if the insertion rate of success were available. Major Grant, I.M.S., in his note forwarding the report has some very pertinent remarks on methods of verification of vaccination results a few cases definitely ascertained to be the persons represented in the register is better than a large total of children collected beforehand in a village. The recent changes in, and want of a Deputy Sanitary Commissioner, must be, we agree with Major Grant, adverse to the Vaccination Department.

THE BENGAL VETERINARY DEPARTMENT

Major F. Raymond, F.R.C.V.S., the Superintendent, Civil Veterinary Department, Bengal, submits the report for the year 1900-01.

The students do not appear to be a very bright lot, and in some cases their removal from the College was advised. A Veterinary Museum is being got ready, the Government of India having given Rs. 600 and the Bengal Government Rs. 2,900. We fail to see the urgency of collecting ancient Sanskrit MSS., &c., on veterinary medicine, as Raja S. S. Roy, of Tahirpur, has proposed. A good modern library is what the students need. At the hospital 2,103 cases were treated, horses, cattle, sheep and goats, a considerable increase on the figures for the previous year. The number of infectious cases treated was considerable, viz., 20 of glanders, 5 of tetanus, 92 of rinderpest, 6 of surra (4 horses, 2 cattle), 42 of eczema contagiosa, 3 of strangles, 2 of influenza, 32 of distemper, 18 of rabies, 4 of tuberculosis. The Superintendent notes that a statement attributed to the Imperial Bacteriologist as to the non-existence of tuberculosis in Indian cattle is incorrect, as every year cases of advanced tuberculosis are admitted and diagnosis is confirmed *post mortem*. The report gives details of the veterinary dispensaries in the districts of Bengal, many important districts are still without the services of a Veterinary Officer. We are glad

to see that the question of the disinfection of Railway horse boxes is receiving attention, as it is a matter too often neglected. However as the Native dealers whose horses are most often infected use cattle trucks only, the danger to valuable animals going in horse boxes is not so great.

Table M in the report shows that cattle disease existed in all districts in Bengal. The continued presence of contagious diseases in the Calcutta cow houses was the subject of much discussion, and as newly purchased and malnutritioned ponies were found to be mixed up together, it is evident that the management of these establishments leaves much to be desired, and the diseases there prevailing are a definite source of danger to the property of horse and cattle owners in Calcutta.

We note that Major Raymond raises objections to Captain Rogers' double inoculation method against rinderpest, and prefers the less effective, if simpler, plain serum method.

It is noted that tuberculous was not found among the sheep belonging to the Army Supply Department.

A Hæmophilus called "hemorrhagic septicemia" was found to prevail among sheep in the Andamans and also in Bengal.

Correspondence.

THE MORTALITY OF ELEPHANTIASIS OPERATIONS

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR—I regret to learn from Colonel McLeod's letter, in the last number of the *Indian Medical Gazette*, that I appear to have done him an injustice in my article on scrotal elephantiasis. It did not occur to me for a moment that my figures could be read in the sense that Colonel McLeod has read them.

The object of the remarks to which he refers was not to record the results of different operators, but to show the steady reduction in the mortality that has followed the introduction of antiseptics. The figures quoted from Colonel McLeod were (as stated in my article) those of the Calcutta hospitals and not those of his own operation, but it was not made sufficiently clear that they referred to the earlier years.

I regret exceedingly that want of clearness on this point should have given rise to mistake, more especially as Colonel McLeod was one of the chief pioneers in this branch of surgery.

Yours, &c.,

I. MAITLAND, M.D.,

Lieut. Col., I.M.S.

MADRAS.

GUINIA GRASS AS A REMEDY FOR HERPES

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR—They use here, in Orissa, Guinea grass as a domestic remedy in herpes. I saw lately a case of herpes Zoster treated locally by it, in which the intense pain and irritation were relieved within 12 hours. The grass is rubbed into a paste with *Dahi* (curdled milk) and applied as a plaster. The grass is called *Dhanitari*, which may be an abbreviation of *Dhanvantari*. As a remedy for colic in cattle, it is very largely used.

Is the analgesic action due to the essential oil contained in the grass, or has the lactic acid in the curd got anything to do with it, or does the paste act mechanically by excluding the air?

Orissa abounds in indigenous drugs and it would be worth while to collect, verify and publish the medical notions and traditions of the people of this part of India regarding these drugs.

Yours, &c.,

D. G.

IS THE GOAT IMMUNE TO TUBERCULOSIS?

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—Can you tell me if goat is subject to any kind of tuberculosis, either bovine or human? I ask this question in the interest of the Hindus who not being a beef eating race, have no chance of getting phthisis from tuberculous beef, and consumption of fresh, unboiled milk, in general practice being unknown to them, the chance of infection through milk also is practically nil.

If now science proves that goat's flesh can never be tainted, the channel of infection in the case of a Hindu, fortunately becomes narrowed to sputum of sick person. I remember to

have read some time ago the observation of a French doctor, that goats are immune to the disease. I don't know if this has been verified by others and accepted as final. As we will have to be careful against infection through sputums as well as through tainted milk and meat of cattle, till Dr Koch's observation is universally accepted, and as goat's meat is the only kind of animal food allowed to Hindus by their Shastras, I take this opportunity of elucidating through you certain points about the health aspect of an important section of the Indian community.

In this connection, it may be well to remember, that Hindu physicians attribute remedial value to goat's milk and meat in phthisis. They go to the extent of advising consumptive patients to associate themselves with and cultivate the company of goats and take their excretions as well. They use goat's milk in all kinds of hemorrhage, including hemoptysis. The lime salts in it may account for the hemostatic action. The large percentage of cream in goat's milk, by supplying an appreciable amount of animal fat in the economy, may enable the organism to resist for a time the effects of a tuberculosis bacillus.

Yours, &c,
D G

[Yes the goat is said to be immune but it is not immune to experimental tuberculosis in Europe and has been frequently used in such experiments. We do not think that bovine tuberculosis has much to do with the undoubted prevalence of lung tuberculosis among Natives of India. Tuberculosis has been found in Bengal cattle (see p. 487), but we believe it is certainly comparatively rare in Indian cattle.—Ed, I M G.]

INVOLUNTARY IRIDECTOMY

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—I have had the iris get in front of the knife in about 9 per cent. of my cataract extractions. It has not been more frequent when the anesthesia was incomplete, but it has occurred less often as my experience has increased. It has appeared to me to be due to a too rapid escape of aqueous humour allowing the lens and iris to fall forward while the section was being made. When this has not happened I have never known it to occur. The premature escape of aqueous has been due to some local like or lateral movement of the knife or to the patient screwing his eyes up. Captain Duer's appeal to 'our great operators' compels me to either remain silent or subscribe myself

'A MINOR OPERATOR'

THE MORTALITY OF OPERATION FOR THE RADICAL CURE OF HERNIA

To the Editor of "THE INDIAN MEDICAL GAZETTE"

SIR,—In your September No. Professor McLeod takes exception in his London Letter, p. 343, to a reference which I made in my paper on Hernia operations (published in your May issue) to his hernia mortality previous to 1835. As the paragraph in question was explicitly referring to the high mortality of early days, it is quite obvious that Professor McLeod's objection is unfounded. It is, however, satisfactory to learn that a later series showed so marked an improvement.

Yours, &c,

KASHMIR, } ERNEST F NEVE,
12th Oct 1901 } M D, F R C S E

INVOLUNTARY IRIDECTOMY

To the Editor of "THE INDIAN MEDICAL GAZETTE."

SIR,—With reference to Capt Duer's inquiries regarding the above subject, an answer may be found in Capt. Smith's paper in your Special Ophthalmic Number, p. 222, in which he attributes this accident to the operator not making the puncture and counter puncture and the cutting outwards one continuous movement. This seems a rational explanation, but no doubt imperfect anaesthesia, as Major Tull Walsh suggests, may be a contributory cause. It is not unlikely that Capt Duer's surmise that the use of atropine favours the occurrence of the accident is correct, for the pupil when dilated presents a larger segment of the iris to the edge of the knife. My own plan formerly was to instil a few drops of eserine solution before operating, and so to draw the edge of the iris well out of the way, but I suppose my experience has been common to others that the involuntary iridectomy tends to disappear spontaneously as one's practice increases.

Yours, &c,
DISTRICT MOGHAYR, } J M MACPHAIL, M D (Gl'rg),
7th Oct 1901 } Mission Hospital, Oshakai

Service Notes

WE note that among a chorus of wide and strong protests of I M S officers against the wild idea of amalgamation with the R A M Corps, one I M S officer is found to write to B M J his approval of what he calls an 'Imperial Medical Service'.

ASSISTANT SURGEON W D BARTLEY, I M S D, acted for Lieutenant-Colonel H St C Carruthers, I M S, Medical Storekeeper, Madras, during the absence of the latter officer on deputation.

THE following Madras officers are absent on furlough, viz, Lieutenant-Colonel H Allison, I M S, till 5th February 1902, Lieutenant-Colonel W G King, C I F, I M S, till 3rd December 1901. Lieutenant Colonel W A Lee, I M S, till 21st March 1903, Lieutenant Colonel T H Pope, I M S, till 18th January 1902, Lieutenant Colonel F C Reeves, I M S, till 23rd February 1902, Lieutenant Colonel A T L Patch till 9th December 1901, Lieutenant Colonel A J O'Hara, I M S, till 4th July 1902, Major F J Crawford, I M S, till 26th November 1901, Captain C F Fearnside, I M S, till 11th October 1902, Captain G G Giffard, I M S, till 2nd October 1902, Captain C Donovan, I M S, till 5th March 1902, and Captain C H L Palk till 2nd September 1902.

A WRITER signing himself "Colonel" writes to the *Broad Arrow* (August 3rd) suggesting that as an inconspicuous uniform of khaki colour had been found necessary for soldiers in the field, the uniform of all non-combatants should be equally conspicuous. He therefore proposes to clothe all non-combatants in scarlet or other brilliant colour, so that the enemy may not fire upon them by mistake. If this proposal of "Colonel" is carried out, we may find that in some future war 'the thin red line of heroes' is entirely composed of the medical officers and their assistants.

WE understand that the health of Colonel T H Hendley, I M S, C I E, has benefited much by his leave home, and he is expected out again in December.

MAJOR HAVELOCK CHARLES, I M S, F R C S I, is expected to return to Calcutta from furlough in the last week of November.

CAPTAIN T H DELANY, M B, I M S, Medical Officer, 44th Gurkhas, is appointed to act as Civil Surgeon, Naga Hills, in addition to his other duties.

THE following is an example of the way *not* to make the I M S attractive. A Residency Surgeon was in constant attendance upon a Maharana's son for one year and two months incessantly, and before going on furlough he submitted his bill through Government for Rs 22,000. He has been now asked to give his explanation for asking this amount. Nevertheless a Delhi *hakem*, who attended the child for 33 days, got off with Rs 1,000 a day, or Rs. 33,000. Meantime a new Residency Surgeon has been allowed to charge the huge sum of Rs 10 (ten) a day, that is, while a F R C S and M B (Lond.) is not allowed his fee, a quack, who would not be allowed to practise in any civilised country gets away with Rs 33,000 for 33 days work. Such a story cannot tend to attract the best men to the Service.

AS we have already announced, Major A H Nott, I M S, M B, succeeds Lieutenant-Colonel A Leahy, I M S, F R C S, at Darjeeling.

LIEUTENANT COLONEL A LEAHY goes to Howrah, *vice* Lieutenant Colonel Bovill, about to retire. Captain B H Deane, I M S, goes to Hazaribagh, and Captain E Waters, I M S, goes to Midnapore.

CAPTAIN A F STEVENS, I M S, has gone to Airah as Civil Surgeon from temporary military employ.

WE understand that Lieutenant A G McKendrick, I M S, has been appointed by the India Office to work with Major Ronald Ross in his East African Campaign against mosquitoes and malaria. Lieutenant McKendrick only entered the service on 27th June 1901, and was posted to the Bengal Command. It is to be presumed that this service on the East Coast of Africa will count as service toward pension, an important point which a young officer might lightly overlook.

